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First record of the genus *Schistoglossa* Kraatz from Canada with descriptions of seven new species (Coleoptera, Staphylinidae, Aleocharinae)

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Abstract

The following seven new aleocharine species of the genus *Schistoglossa* Kraatz are described from Canada and the United States (New Hampshire): *S. brunswickensis* Klimaszewski & Webster, **sp. n.**; *S. charlottae* Klimaszewski, **sp. n.**; *S. campbelli* Klimaszewski **sp. n.**; *S. carexiana* Klimaszewski, **sp. n.**; *S. hampshirensis* Klimaszewski, **sp. n.**; *S. pseudocampbelli* Klimaszewski & Webster **sp. n.**; and *S. sphagnorum* Klimaszewski & Webster, **sp. n.** All are illustrated by digital images of the entire body and the genital structures and compared with western Palaearctic species. Data on bionomics and distribution are provided. A checklist of Nearctic species and a key to Canadian species of the genus are presented. *Boreophilia blatchleyi* (Bernhauer & Scheerpeltz, 1926) is transferred to the genus *Schistoglossa*, and the previously unknown female is illustrated. One new subgenus is erected, *Schistoglossa* (*Boreomorpha*), to accommodate some species of the genus.

Keywords

Aleocharinae, Coleoptera, diagnostics, *Schistoglossa*, Staphylinidae, new species, Canada

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Introduction

Schistoglossa Kraatz (1856) is a Holarctic genus with 19 valid species (Ashe 2001; Smetana 2004) including seven new species described herein. Ten species are recorded from the Palaearctic region (Smetana 2004) and five nominal species have been recorded from the Nearctic region (Seevers 1978; Moore and Legner 1975). The Nearctic species included one unconfirmed record of Palaearctic *S. viduata* (Erichson) (Moore and Legner 1975; Seevers 1978), two doubtful records of undescribed, but cited as described species, *S. aubeiodes* Brundin and *S. holmbergi* Brundin (Seevers 1978; Campbell and Davies 1991), and one valid species, *S. approximata* Bernhauer, with its synonym *S. flavicornis* Bernhauer (Gusarov 2003). The genus *Schistoglossa* was first reported from the Palaearctic region by Bernhauer (1909) who described two species: *S. approximata* and *S. flavicornis* [originally as *Atheta*]. Gusarov (2003) synonymized *S. flavicornis* with *S. approximata*. Seevers (1978) proposed that *Atheta reticula* Casey, 1910 (a misspelling of *S. reticulata*) from Virginia should be transferred to *Schistoglossa* along with *S. aubeoides* [Massachusetts] and *holmbergi* [Alaska], "described" from America by Brundin (1943). Herman (in Seevers 1978) was unable to find descriptions of these two species, which, as far as is known, were not described and constitute nomina nuda. Brundin (1943) said the genus *Schistoglossa* was represented in the Nearctic region by two new species in Bernhauer's collection: one from Alaska, Sitkha, called "*aubei*" that was related to *curtipennis* [referred to as *holmbergi* in Seevers /1978/], and one from Massachusetts, which was close to "*aubéi*" [referred to as *aubeiodes* in Seevers /1978/]. We assume that Seevers saw the specimens Brundin was referring to in Bernhauer's collection, and did not mean "described" (in the formal taxonomic sense), and thus "mentioned" the two species in his paper, and cited the names as they were labelled in Bernhauer's collection.

Ashe (2001) examined *A. reticulata* and correctly excluded it from *Schistoglossa* because it was lacking bifid mandibles, a key character distinguishing *Schistoglossa* from related genera. Therefore on the grounds of the present evidence there is only one valid species, *S. approximata*, described from North America prior to this publication. Gusarov borrowed the types of *S. approximata* and *S. flavicornis* (a synonym of *S. approximata*) from the Field Museum, Chicago, and despite consistent efforts to borrow them for a short examination we were not able to obtain them. Therefore our new species were not compared with Bernhauer's type material of *S. approximata* and *S. flavicornis*.

The purpose of this paper is to review all nominal Nearctic *Schistoglossa* species, to describe seven new species from Canada and one from Canada and the United States, and to provide a key for their identification.

Material and methods

Over 80 adults of *Schistoglossa* from Canada and the United States were examined and most specimens were dissected. The genital structures were dehydrated in ab-

solute alcohol and mounted in Canada balsam on celluloid microslides and pinned with the specimens from which they originated. The photographs of the entire body and the genital structures were taken using an image processing system (Nikon SMZ 1500 stereoscopic microscope; Nikon Digital Camera DXM 1200F; and Adobe Photoshop software).

Terminology mainly follows that used by Seevers (1978). The ventral part of the median lobe of the aedeagus is considered to be the part of the bulbus containing the foramen mediale, the entrance of the ductus ejaculatorius, and the adjacent venter (ventral part of the tubus of the median lobe) of the tubus; the opposite side is referred to as the dorsal part. In species descriptions, microsculpture refers to the upper forebody integument.

The shape of the spermatheca in *Schistoglossa* species provides very good characteristics for species identification while the median lobe of the aedeagus is similar in closely related species. For this reason, females were designated as the holotypes for our new species. All newly described Nearctic species of *Schistoglossa* were compared with illustrations of the spermathecae and the median lobes of the aedeagus (lateral view) of the western Palaearctic species of the genus. This is standard procedure to eliminate the possibility of synonymy with species previously described from the Palaearctic region. For illustrations of Palaearctic species of *Schistoglossa,* see Benick and Lohse (1974) and Lohse (1989).

Depository abbreviations:

CNC Canadian National Collection of Insects, Arachnids and Nematodes, Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada

LFC Natural Resources Canada, Canadian Forest Service, Laurentian Forestry Centre, Insectarium R. Martineau, Quebec City, Quebec, Canada

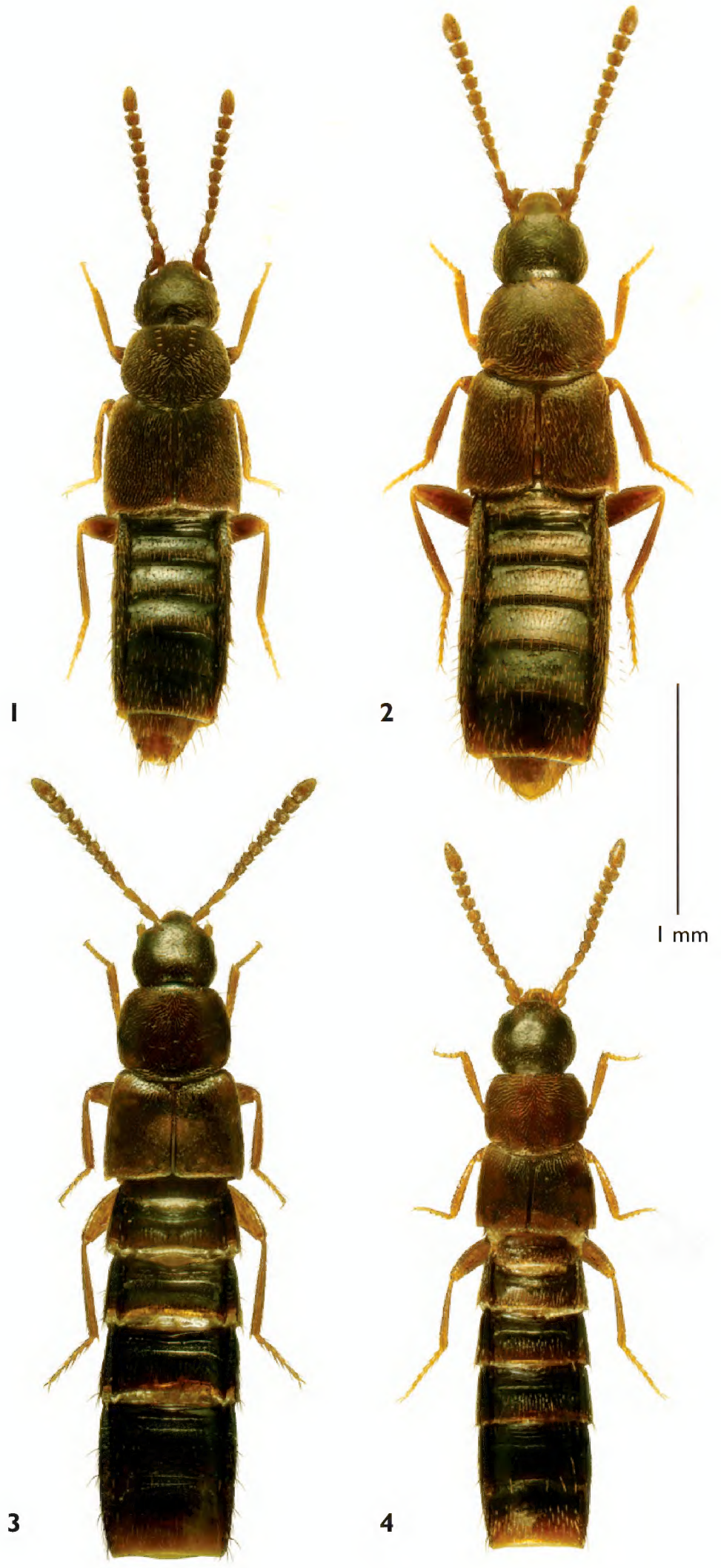
LUC Lund University Collection, Lund, Sweden

RWC Reginald Webster private collection, 24 Millstream Drive, Charters Settlement, New Brunswick, Canada

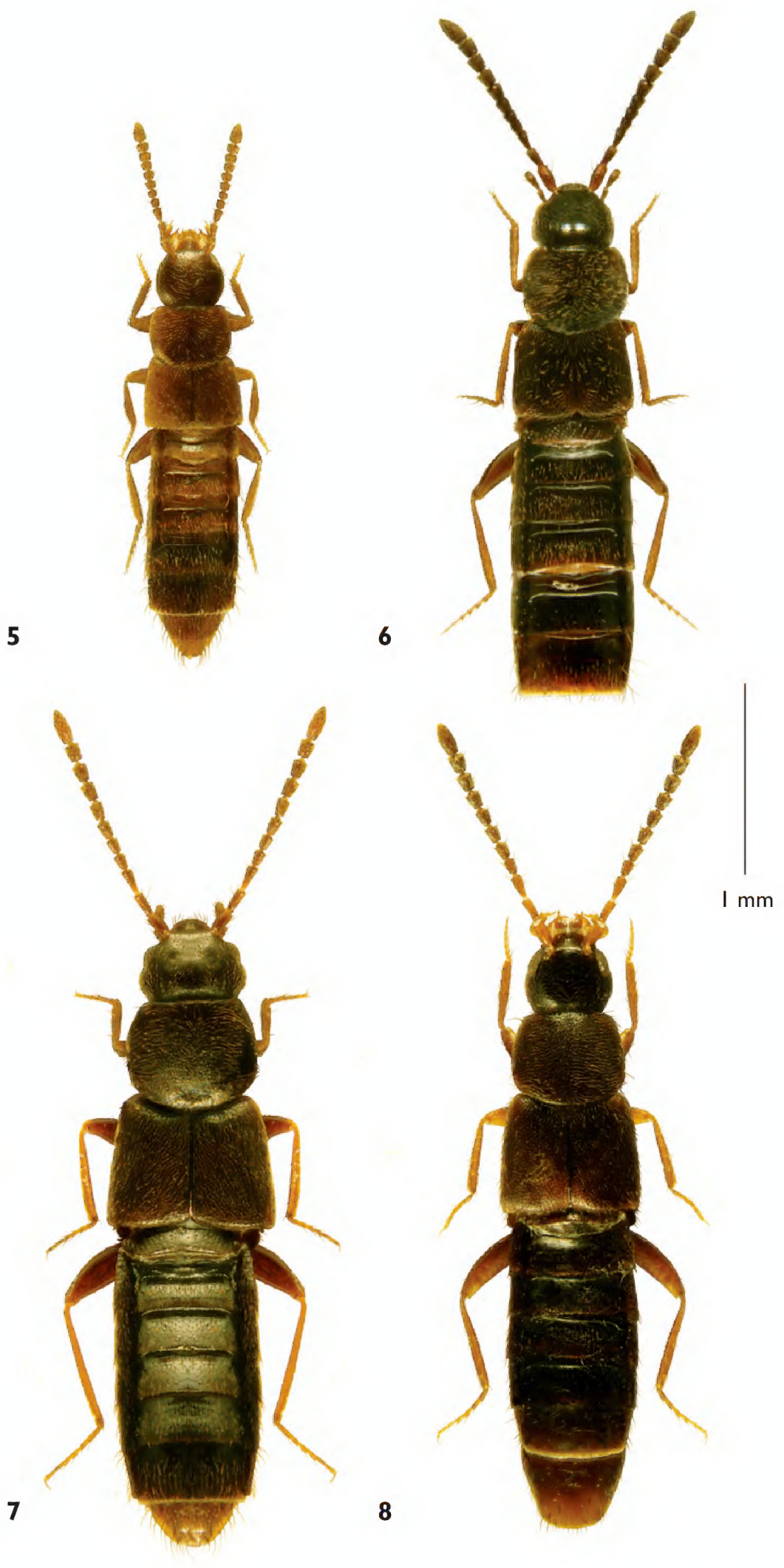
Schistoglossa Kraatz, 1856

Schistoglossa Kraatz, 1856: 344; Benick and Lohse 1974: 81; Seevers 1978: 111; Moore and Legner 1975: 480, Ashe 2001; Smetana 2004: 416. Type species: *Homalota viduata* Erichson, 1837.

Diagnosis. *Schistoglossa* may be distinguished from other athetines by the following combination of characters: body subparallel (Figs 1–8); head slightly narrower or nearly as broad as pronotum (Figs 1–8); eyes small, approximately two to three times shorter than the postocular region of head, tempora partially feebly carinate at base of head or carinae virtually obsolete; antennae approximately reaching posterior margin of elytra, articles 5–10 slightly transverse or slightly elongate (Figs 1–8);



Figures 1–4. *Schistoglossa* species, dorsal images: **1** *S. charlottae* **2** *S. campbelli* **3** *S. pseudocampbelli* **4** *S. brunswickensis*.



Figures 5–8. *Schistoglossa* species, dorsal images: **5** *S. hampshirensis* **6** *S. sphagnorum* **7** *S. carexiana* **8** *S. blatchleyi*.

glossae divided into two separate lobes (Figs 78, 81); mandibles appearing bifid apically but in fact left mandible is bifid (Figs 76, 79) and the right mandible bears two apical and one subapical tooth, apical teeth often overlap and are visible as one in dorsal view creating an illusion of a bifid mandible (Figs 77, 80), the teeth of left mandible are in the horizontal plane and the two apical teeth of right mandible are in the vertical plane and can be locked together; maxillary palps with 4 articles, terminal article is needle-shaped (Fig. 82); pronotum transverse to nearly subquadrate, broadest in the middle or in apical third, hind angles rounded (Figs 1–8), hypomeron clearly visible in lateral view; integument smooth and moderately glossy, microsculpture weak, punctation fine, pubescence on midline of disc directed entirely or partially posteriad and elsewhere directed latero-posteriad (Figs 1–8); mesocoxae contiguous; median lobe of aedeagus bearing large bulbus and triangular tubus in dorsal view (Figs 10, 18, 26, 34, 44, 53, 61, 69), crista apicalis small (Figs 11, 19, 35, 45, 54, 62, 70), internal sac with reversed V-shaped structure in dorsal view in *Schistoglossa* s. str. (Figs 10, 18, 26, 34, 44), and with lunural apical structures in the subgenus *Boreomorpha* (Figs 53, 54, 61, 62, 69, 70); male tergite 8 with two large lateral teeth and apical crenulation in *Schistoglossa* s. str. (Figs 12, 20, 28, 37, 47), or tergite 8 truncate apically and without lateral teeth and apical crenulation in the subgenus *Boreomorpha* (Figs 55, 63, 71); spermatheca with capsule tubular (*Schistoglossa* s. str.) (Figs 14, 22, 30, 39, 49), or approximately spherical (*Boreomorpha*) (Figs 57, 65, 73); usually cold-loving species occurring in arctic and subarctic habitats, in temperate regions usually confined to bogs, fens and marshes. This genus is very similar to *Boreophilia* Benick (Figs 83, 84), from which it may be distinguished with certainty by the characters of the mandibles (Figs 76, 77).

Presently, many athetine genera are defined by the combination of characters rather than strict differences between them (Seevers 1978, Benick and Lohse 1974, Lohse et al. 1990, Ashe 2001). Although this is not an optimal situation, there are only limited numbers of autapomorphic character states known in this group. The genus *Schistoglossa* is no exception in this regard except for the mandibular features. There is strong overlapping of external characteristics between *Boreophilia* and *Schistoglossa*, but both genera are well defined by the mandibular characters (Figs 76, 77, 79, 80, 83, 84). The shape of the ligula, an important character for distinguishing genera of athetines, is similar in these two genera (Figs 78, 81, 85). Lohse et al. (1990) stated that the genus *Boreophilia* is "similar to *Schistoglossa* Kraatz, 1856, but differing by simple mandibles (bifid in *Schistoglossa*)". We find this statement inaccurate. In *Boreophilia islandica* (Kraatz, 1857), the type species for the genus *Boreophilia*, the right mandible has one large subapical tooth and one small lobe (Fig. 84), while the other mandible is simple (Fig. 83). In contrast, *Schistoglossa* has a left mandible bearing one subapical tooth (bifid) (Figs 76, 79), and the other bearing three teeth (Figs 77, 80).

Checklist of *Schistoglossa* species recorded from the Nearctic region

(species listed in alphabetical order, synonym indented)

1. *Schistoglossa approximata* (Bernhauer, 1909: 516), originally as *Brundinia* (described from Massachusetts). Moore and Legner 1975: 354. Not examined and status not confirmed.
   Schistoglossa flavicornis (Bernhauer, 1909: 527), originally as *Atheta* (described from Pennsylvania). Synonymized by Gusarov 2003b (as *Atheta*). Not examined and status not confirmed.

I. *Schistoglossa* (*Schistoglossa* s. str.) Kraatz, 1856

2. *Schistoglossa charlottae* Klimaszewski, **sp. n. (Canada, British Columbia, Queen Charlotte Islands).**
3. *Schistoglossa campbelli* Klimaszewski, **sp. n. (Canada, British Columbia, Queen Charlotte Islands).**
4. *Schistoglossa pseudocampbelli* Klimaszewski and Webster, **sp. n. (Canada, New Brunswick).**
5. *Schistoglossa brunswickensis* Klimaszewski and Webster, **sp. n. (Canada, New Brunswick, Ontario, Quebec).**
6. *Schistoglossa hampshirensis* Klimaszewski, **sp. n. (Canada, New Brunswick, Quebec; United States of America, New Hampshire).**

II. *Schistoglossa* (*Boreomorpha*) Klimaszewski & Webster, subgen. n.

7. *Schistoglossa sphagnorum* Klimaszewski and Webster, **sp. n. (Canada, New Brunswick).**
8. *Schistoglossa carexiana* Klimaszewski, **sp. n. (Canada, British Columbia, Queen Charlotte Islands).**
9. *Schistoglossa blatchleyi* (Bernhauer and Scheerpeltz, 1926: 639), replacement name for preoccupied *Atheta* (s. str.) *caviceps* Blatchley 1910: 354; Gusarov 2003: 76; Gouix and Klimaszewski 2007: 72. (Canada, Northwest Territories, **Yukon Territory**, Manitoba, **Ontario**, **Quebec**, Newfoundland, **New Brunswick**; United States of America: Alaska, Indiana). **comb. n.**
   Boreophilia chillcotti Lohse, 1990 (in Lohse et al. 1990) 157 (=*Schistoglossa*). Synonymized by Gusarov 2003a: 76.

Erroneous records

10. *Schistoglossa aubeiodes* Brundin, 1943? Seevers 1978: 111 (reported from Massachusetts); Campbell and Davies 1991: 102 (reported from Alaska). No published description of this species in Brundin 1943. **Nomen nudum**.
11. *Schistoglossa holmbergi* Brundin, 1943? Seevers 1978: 111 (reported from Alaska); Campbell and Davies 1991: 102 (reported from Alaska). No published description of this species in Brundin 1943. **Nomen nudum**.
12. *Schistoglossa viduata* (Erichson, 1837: 330), originally as *Homalota*. Moore and Legner 1975: 480 (America?). Unconfirmed from Nearctic region.

Key to species of *Schistoglossa* occurring in Canada

1 Antennal articles 6–10 slightly to strongly transverse (Figs 1–5) **2**
– Antennal articles 6–10 slightly to strongly elongate (Figs 6–8) **6**
2 Elytra short and strongly transverse (Figs 3–5) **3**
– Elytra slightly elongate (Figs 1–2) **5**
3 Eyes streamlined and not protruding from contour of head, postocular area about three times maximum diameter of eye (Fig. 5); male tergite 8 slightly emarginate apically and slightly crenulate (Fig. 47); apex of median lobe of aedeagus slightly produced ventrally (Figs 45, 46); spermatheca S-shaped (Fig. 49)..... ***S. hampshirensis*** **Klimaszewski, sp. n.**
– Eyes slightly protruding from contour of head, postocular area from two to two and a half times maximum diameter of an eye (Figs 3, 4) **4**
4 Body length 1.8–2.1 mm; male tergite 8 with strongly concave apical margin and irregularly crenulate (Fig. 37); apex of median lobe of aedeagus strongly produced ventrally (Fig. 35); spermatheca S-shaped (Fig. 39) ..... ***S. brunswickensis*** **Klimaszewski & Webster, sp. n.**
– Body length 2.7–2.9 mm; male tergite 8 with slightly concave apical margin and regularly crenulated (Fig. 28); apex of median lobe of aedeagus slightly produced ventrally (Fig. 27); spermatheca L-shaped (Fig. 30) ..... ***S. pseudocampbelli*** **Klimaszewski & Webster, sp. n.**
5 Maximum width of pronotum distinctly less than width of elytra at shoulders (Fig.1); elytral ratio of maximum length to maximum width 0.7 (Fig. 1); apical margin of tergite 8 with two larger lateral teeth and lacking regular crenulation (Fig. 12); spermatheca L-shaped (Fig. 14)..... ***S. charlottae*** **Klimaszewski, sp. n.**
– Maximum width of pronotum about the same as width of elytra at shoulders (Fig. 2); elytral ratio of maximum length to maximum width 0.8 (Fig. 2); apical margin of male tergite 8 with two larger lateral teeth and regular crenulation (Fig. 20); spermatheca S-shaped (Fig. 22) ..... ***S. campbellii*** **Klimaszewski sp. n.**
6 Body length 2.8–3.0 mm, elytra broadening posteriorly (Fig. 7); median lobe of aedeagus and spermatheca as illustrated (Figs 61, 62, 65) ..... ***S. carexiana*** **Klimaszewski, sp. n.**
– Body length 2.3–2.5 mm, elytra subparallel (Figs 6, 8) **7**
7 Elytra as long as pronotum at suture (Fig. 6); postocular area approximately as long as three times maximum diameter of eye seen from above (Fig. 6); median lobe of aedeagus with slightly sinuate venter of tubus and narrowly elongate apex (Fig. 54); spermatheca with capsule lacking invagination (Fig. 57)..... ***S. sphagnorum*** **Klimaszewski & Webster, sp. n.**
– Elytra longer than pronotum at suture (Fig. 8); postocular area approximately as long as two times maximum diameter of eye seen from above (Fig. 8); median lobe of aedeagus with strongly sinuate venter of tubus and short and blunt apex (Fig. 70); spermatheca with capsule bearing large invagination (Fig. 73)..... ***S. blatchleyi*** **(Bernhauer & Scheerpeltz)**

Species review

I. Subgenus *Schistoglossa* (s. str.) Kraatz, 1856

Figs 1–5, 9–51

Type species: *Homalota viduata* Erichson, 1837: 330 (=*Schistoglossa*). Fixed by Kraatz 1856, by monotypy.

Diagnosis. The subgenus *Schistoglossa* (s. str.) may be characterized by the following combination of characters: antennal articles 5–10 slightly transverse; eyes small (Figs 1–5); postocular area well developed and about as long as three times maximum diameter of eye (Figs 1–5); postocular carinae weak, present only basally or obsolete; median lobe of aedeagus with bulbus and tubus distinctly separated in dorsal view (not streamlined) (Figs 10, 18, 34, 44), internal sac with V-shaped structure (Figs 10, 18, 26, 34, 44); male tergite 8 truncate or emarginate apically, apical margin slightly to strongly crenulate and bearing two large lateral teeth (Figs 12, 20, 28, 37, 47); spermatheca L- or S-shaped and with tubular capsule (Figs 14, 22, 30, 39, 49).

Schistoglossa charlottae Klimaszewski, sp. n.

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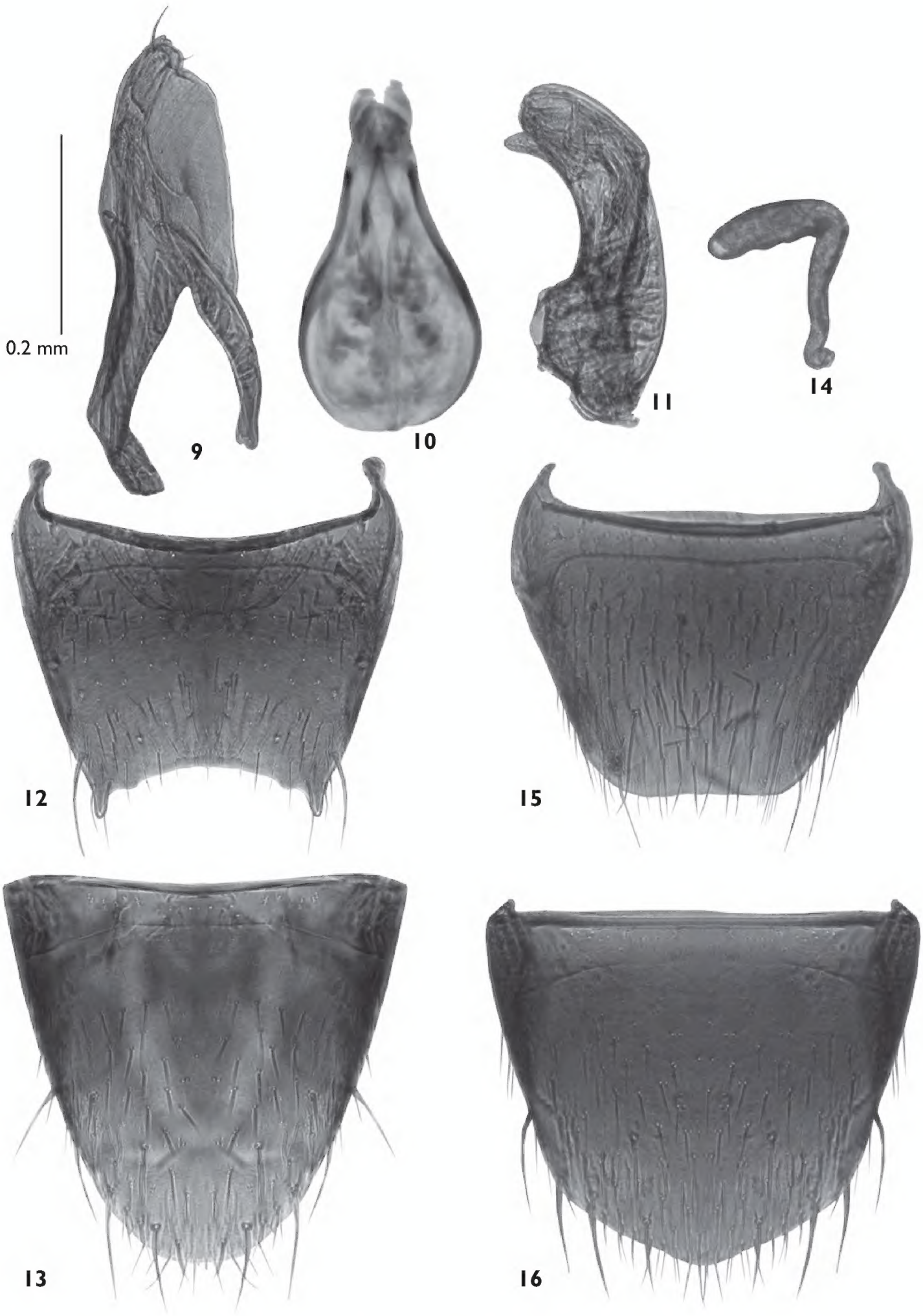
Figs 1, 9–16, Map 1

Holotype (female): CANADA, British Columbia, Queen Charlotte Is., 8.8 km SW Tow Hill, J.M. Campbell; 22.VIII.1983, 83–108, treading *Sphagnum* & *Carex* at edge of marsh (CNC). **Paratypes:** CANADA, British Columbia, Queen Charlotte Is., 8.8 km SW Tow Hill, J.M. Campbell; 22.VIII.1983, 83–108, treading *Sphagnum* & *Carex* at edge of marsh (CNC) 1 male, (LFC) 1 female; British Columbia, New Denver, 13.VIII.1982, leg. R. Baranowski (LUC) 1 male.

Etymology. The specific name *charlottae* is an adjective derived from the Queen Charlotte Islands, where the species was found. The Queen Charlotte Islands, in turn, were named in 1787 by Captain George Dixon after the wife of the British monarch George III, Queen Charlotte Sophia (1744–1818). Gender feminine.

Diagnosis. Body length 2.0–2.2 mm, body moderately broad and subparallel, approximately uniformly dark brown, moderately glossy and moderately densely pubescent (Fig. 1); antennae slim, articles 5–10 slightly transverse (Fig. 1); tempora each as long as twice the maximum diameter of eye seen from above (Fig. 1); median lobe of aedeagus broad, venter of tubus arcuate laterally (Fig. 11), apical sclerites of internal sac V-shaped in dorsal view (Fig. 10); spermatheca L-shaped with capsule tubular, and without apparent apical invagination, stem moderately narrow and short (Fig. 14).

Description. Body length 2.0–2.2 mm, width 0.4 mm, approximately uniformly dark brown with slightly paler tip of abdomen, and legs (Fig. 1); integument with weak microsculpture, sculpticells irregularly hexagonal, pubescence short, except slightly longer on head and abdomen, yellowish-brown in artificial light, moderately dense.



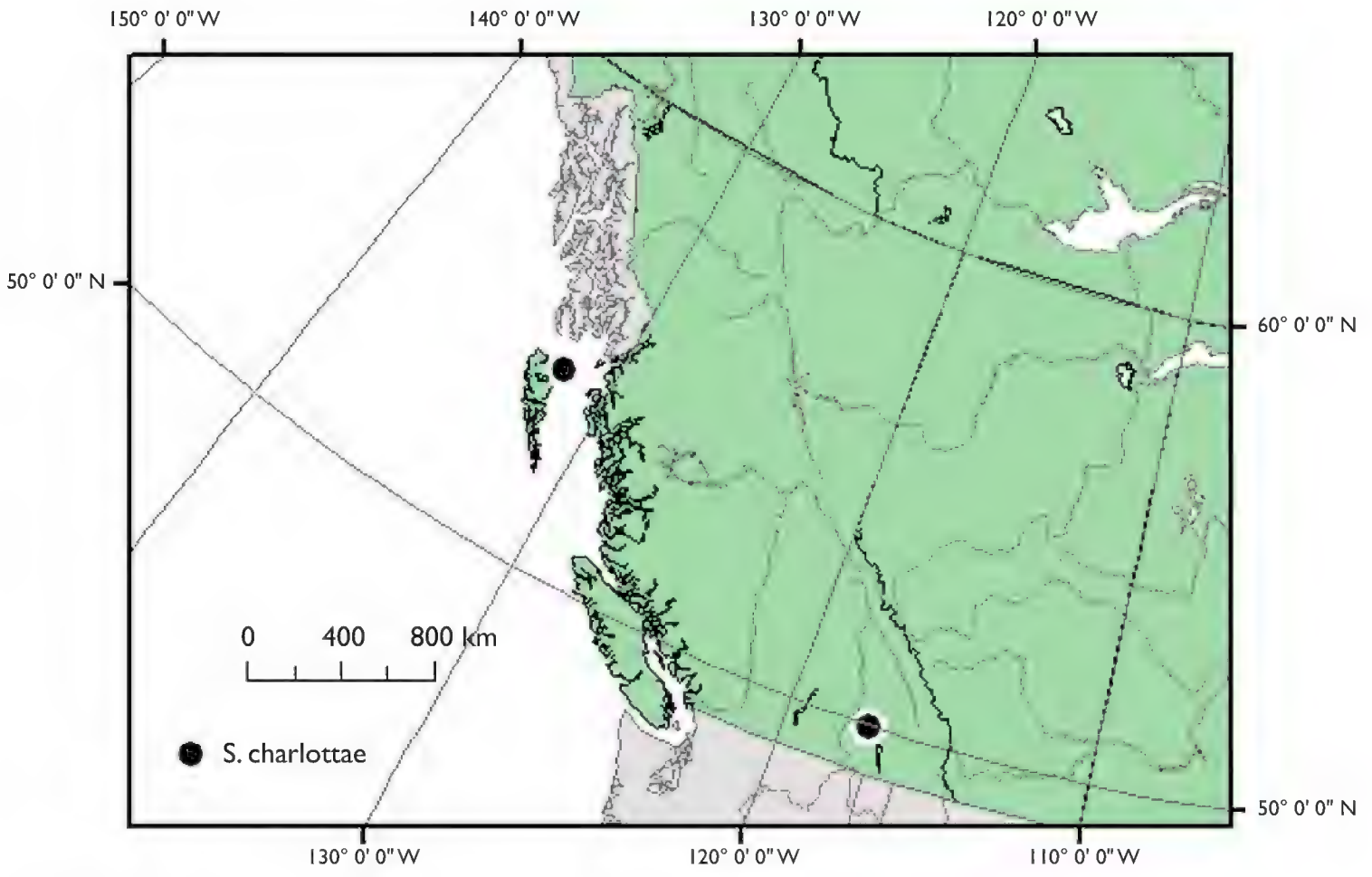
Figures 9–16 *Schistoglossa charlottae*: **9** paramere **10** median lobe of aedeagus in dorsal view **11** median lobe of aedeagus in lateral view **12** male tergite 8 **13** male sternite 8 **14** spermatheca **15** female tergite 8 **16** female sternite 8.

Head slightly elongate, rounded posteriorly, carinae not apparent, tempora as long as twice the maximal diameter of eye seen from above (Fig. 1); antennae slim with articles 5–10 slightly transverse (Fig. 1); pronotum strongly transverse, broadly rounded laterally and posteriorly, broadest in basal third, pubescence directed anteriorly on apical third of the midline and straight posteriorly and obliquely laterally elsewhere (Fig. 1); elytra moderately transverse, and subparallel, hind margin nearly straight, pubescence directed straight posteriad (Fig. 1); abdomen parallel-sided, three basal tergites deeply impressed basally (Fig. 1). **Male.** Median lobe of aedeagus broad and flattened, venter of tubus arcuate (Fig. 11), apical sclerites of internal sac V-shaped in dorsal view (Fig. 10); paramere as illustrated (Fig. 9); tergite 8 transverse and broadly emarginated apically, apical margin with two large and two small teeth (Fig. 12); sternite 8 elongate and rounded posteriorly, antecostal suture sinuate (Fig. 13). **Female.** Spermatheca L-shaped with capsule tubular and without apparent apical invagination, stem moderately narrow and approximately straight except for the twisted end (Fig. 14). Tergite and sternite 8 as illustrated (Figs 15, 16).

Bionomics. Adults were captured by treading *Sphagnum* and *Carex* at edge of marsh in August.

Geographic distribution (Map 1)**.** Known from Canada from southern British Columbia: the Queen Charlotte Islands and New Denver.

Comments. *Schistoglossa charlottae* has genital structures similar to *S. brunswickensis* and is probably closely related to this species.



Map 1. Collection localities in Canada of *S. charlottae*.

***Schistoglossa campbelli* Klimaszewski, sp. n.**
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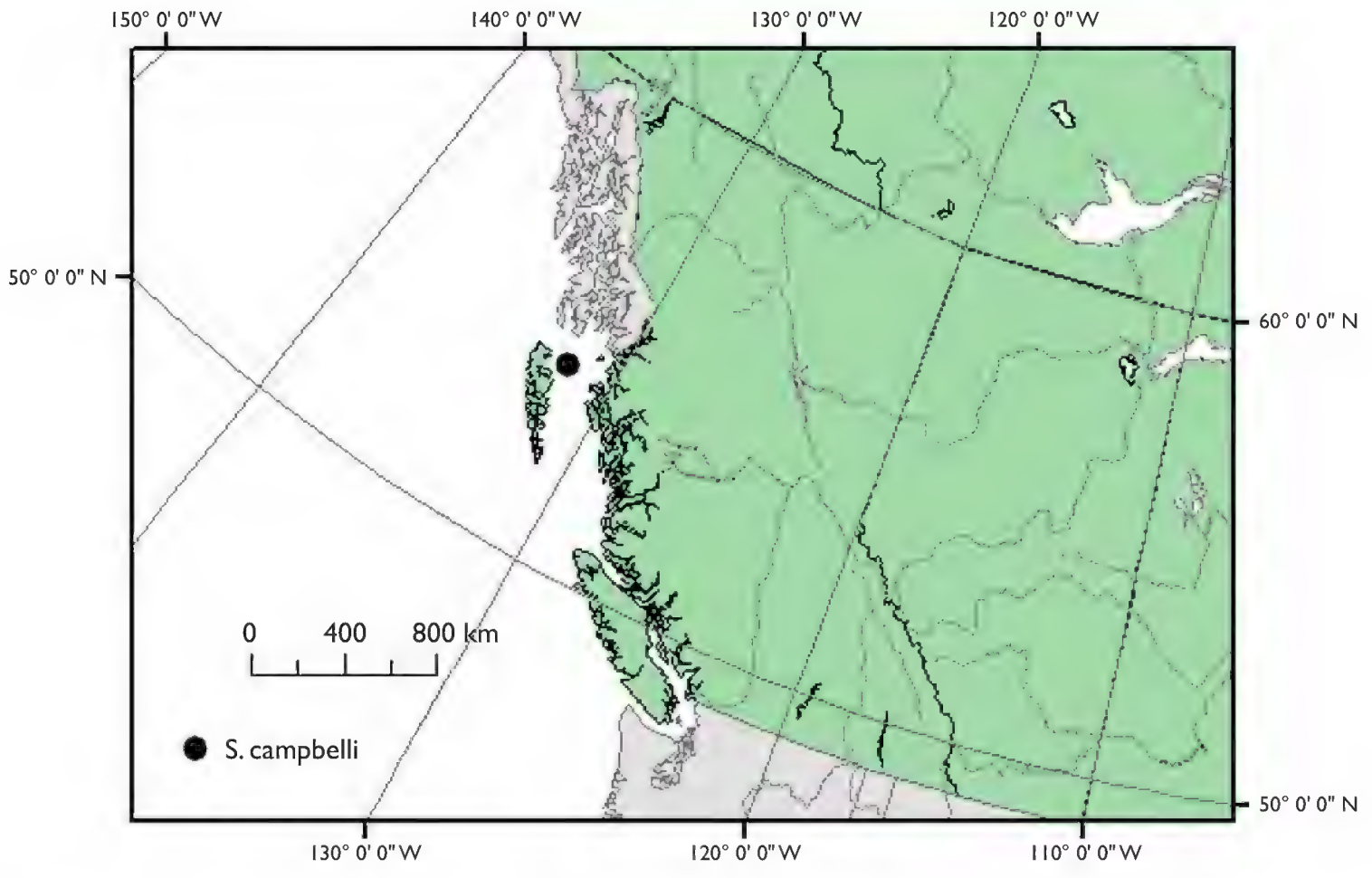
Figs 2, 17–24, Map 2

Holotype (male): CANADA, B.C. [British Columbia], Queen Charlotte Is., 8.8 km SW Tow Hill, J.M. Campbell; 22.VIII.1983, 83–108, treading *Sphagnum* & *Carex* at edge of marsh (CNC). **Paratypes:** CANADA, B.C. [British Columbia], Queen Charlotte Is., 8.8 km SW Tow Hill, J.M. Campbell; 22.VIII.1983, 83–108, treading *Sphagnum* & *Carex* at edge of marsh (CNC) 2 males, 4 females, 6 sex?, (LFC) 1 male, 1 female, 1 sex?

Etymology. This species in named for J.M. Campbell of the former Biosystematics Research Institute, Ottawa, collector of the original series. Gender masculine.

Diagnosis. Body length 2.0–2.4 mm, body moderately broad and subparallel, approximately uniformly dark brown, with tarsi or entire legs paler, moderately glossy and moderately densely pubescent (Fig. 2); antennae slim, articles 5–10 slightly transverse (Fig. 2); tempora each as long as two and a half times the maximal diameter of eye (Fig. 2); median lobe of aedeagus moderately broad, venter of tubus arcuate (Fig. 19), apical sclerites of internal sac V-shaped in dorsal view (Fig. 18); spermatheca S-shaped with capsule spherical apically and tubular basally, and with small apical invagination, stem moderately narrow and strongly sinuate (Fig. 22).



Map 2. Collection localities in Canada of *S. campbelli.*

Figures 17–24. *Schistoglossa campbelli*: **17** paramere **18** median lobe of aedeagus in dorsal view **19** median lobe of aedeagus in lateral view **20** male tergite 8 **21** male sternite 8 **22** spermatheca **23** female tergite 8 **24** female sternite 8.

Description. Body length 2.0–2.4 mm, width 0.4 mm, approximately uniformly dark brown with slightly paler tip of abdomen and legs (Fig. 2); integument with weak microsculpture, sculpticells irregularly hexagonal, pubescence short, except slightly longer on head and abdomen, yellowish-brown in artificial light, moderately dense. Head slightly elongate, rounded posteriorly, weakly carinate basally, tempora as long as two and a half times the maximal diameter of eye as seen from above (Fig. 2); antennae slim with articles 5–10 slightly transverse (Fig. 2); pronotum moderately transverse, broadly rounded laterally and posteriorly, broadest in basal half, pubescence directed anteriorly on apical fourth of the midline and posteriorly and obliquely laterally elsewhere (Fig. 2); elytra moderately transverse, and slightly broadened posteriorly, hind margin sinuate, pubescence directed straight posteriad (Fig. 2); abdomen parallel-sided, three basal tergites deeply impressed basally (Fig. 2). **Male.** Median lobe of the aedeagus moderately broad and flattened, venter of tubus arcuate with apex produced ventrally (Fig. 19), apical sclerites of internal sac V-shaped in dorsal view (Fig. 18); paramere as illustrated (Fig. 17); tergite 8 transverse and broadly emarginate apically, apical margin feebly toothed and with two large lateral teeth (Fig. 20); sternite 8 elongate and rounded posteriorly, slightly pointing medially, antecostal suture straight (Fig. 21). **Female.** Spermatheca S-shaped with capsule spherical apically and tubular basally, and with small apical invagination, stem moderately narrow and strongly sinuate (Fig. 22). Tergite and sternite 8 as illustrated (Figs 23, 24).

Bionomics. Adults were captured by treading *Sphagnum* and *Carex* at edge of marsh in August.

Geographic distribution (Map 2)**.** Known only from the Queen Charlotte Islands of British Columbia, Canada.

Comments. *Schistoglossa campbelli* has a median lobe of the aedeagus and spermatheca similar to those of *S. hampshirensis* and *S. pseudocampbelli* to which it is probably closely related.

***Schistoglossa pseudocampbelli* Klimaszewski & Webster, sp. n.**
urn:lsid:zoobank.org:act:454AF461-DF44-4B14-993D-5FB2163029EB
Figs 3, 25–32, Map 3

Holotype (female): CANADA, New Brunswick, York Co., Charters Settlement, 45.8267°N, 66.7343°W, 21.V.2006, sedge fen, treading sedge hummocks into water, R.P. Webster (LFC). **Paratypes:** New Brunswick: York Co., Charters Settlement, 45.8267°N, 66.7343°W, 21.IV.2005, 21.IV.2006, R.P. Webster, coll., *Carex* marsh, in sphagnum hummocks (LFC) 1 male; (RWC) 2 females; Charters Settlement, 45.8267°N, 66.7343°W, 16.IV.2005, 21.IV.2006, R.P. Webster, coll., *Carex* marsh, in sphagnum hummocks (RWC) 1 female; Charters Settlement, 45.8340°N, 66.7240°W, 17.VI.2007, R.P. Webster, coll., regenerating mixed forest in small marsh, sweeping foliage of *Carex* species (RWC) 1 female; Charters Settlement, 45.8404°N, 66.7360°W, medium-sized brook partially shaded by alders, brook

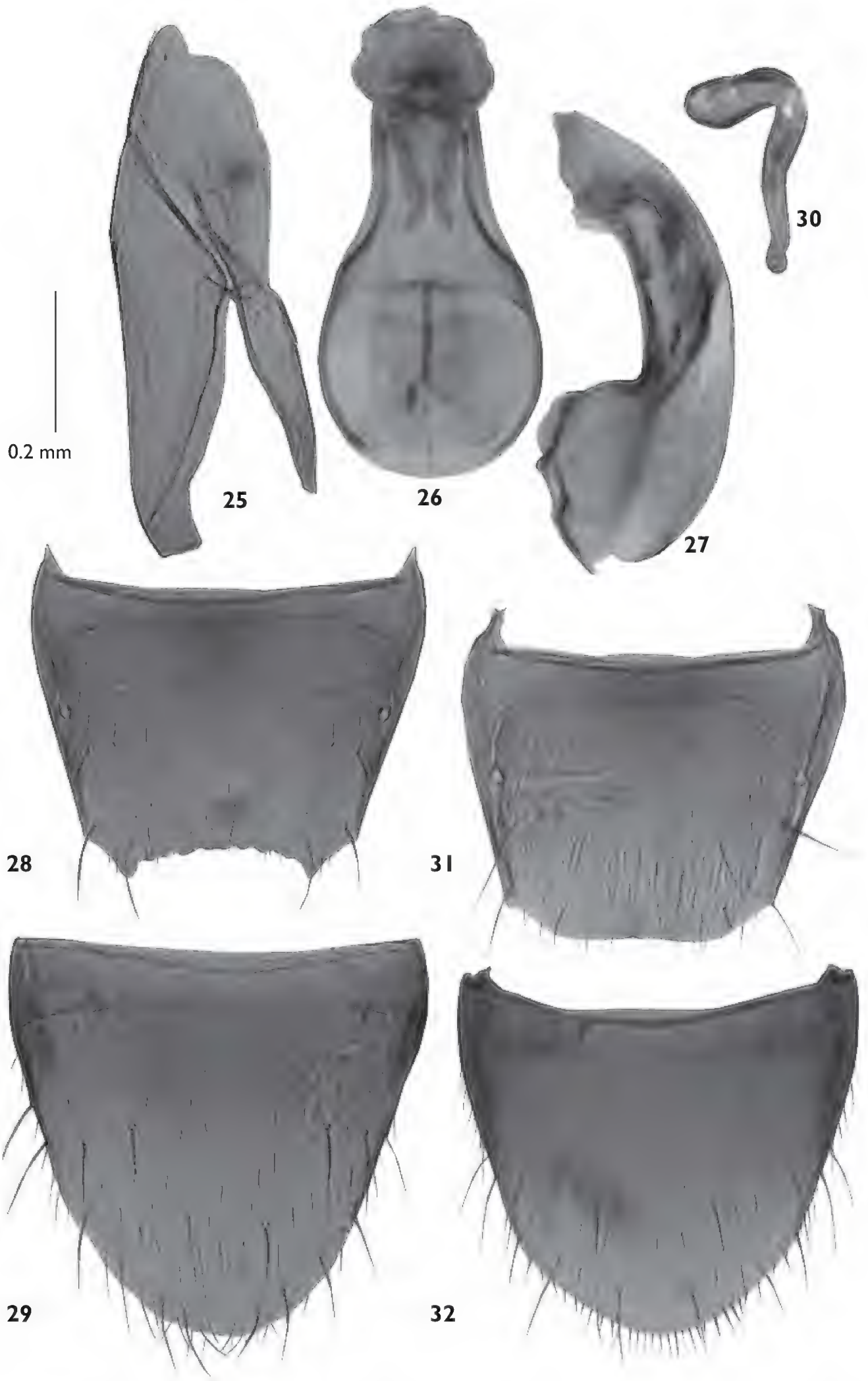
margin among cobblestones and gravel (RWC) 1 female; Mazerolle Settlement, 45.8729°N, 66.8311°W, 9.IV.2006, R.P. Webster, margin of stream [through former (drained) beaver pond], in litter at base of eastern white cedar (RWC) 1 female; near Mazerolle Settlement, 45.8987°N, 66.7903°W, 9.IV.2006, R.P. Webster, coll., marsh [mostly grasses] with scattered alders, sifting grass and sphagnum at base of alder (RWC) 1 female; 1.5 km N of Durham Bridge at Nashwaak River, 46.1408°N, 66.6179°W, 15.VI.2008, R.P. Webster, river margin, among cobblestones near outflow of brook [under alders] (RWC) 1 female.

Etymology. The specific name, *pseudocampbelli*, is an adjective derived from the prefix *pseudo* added to the name *campbelli*, reflecting close genital similarities between the two species. Gender masculine.

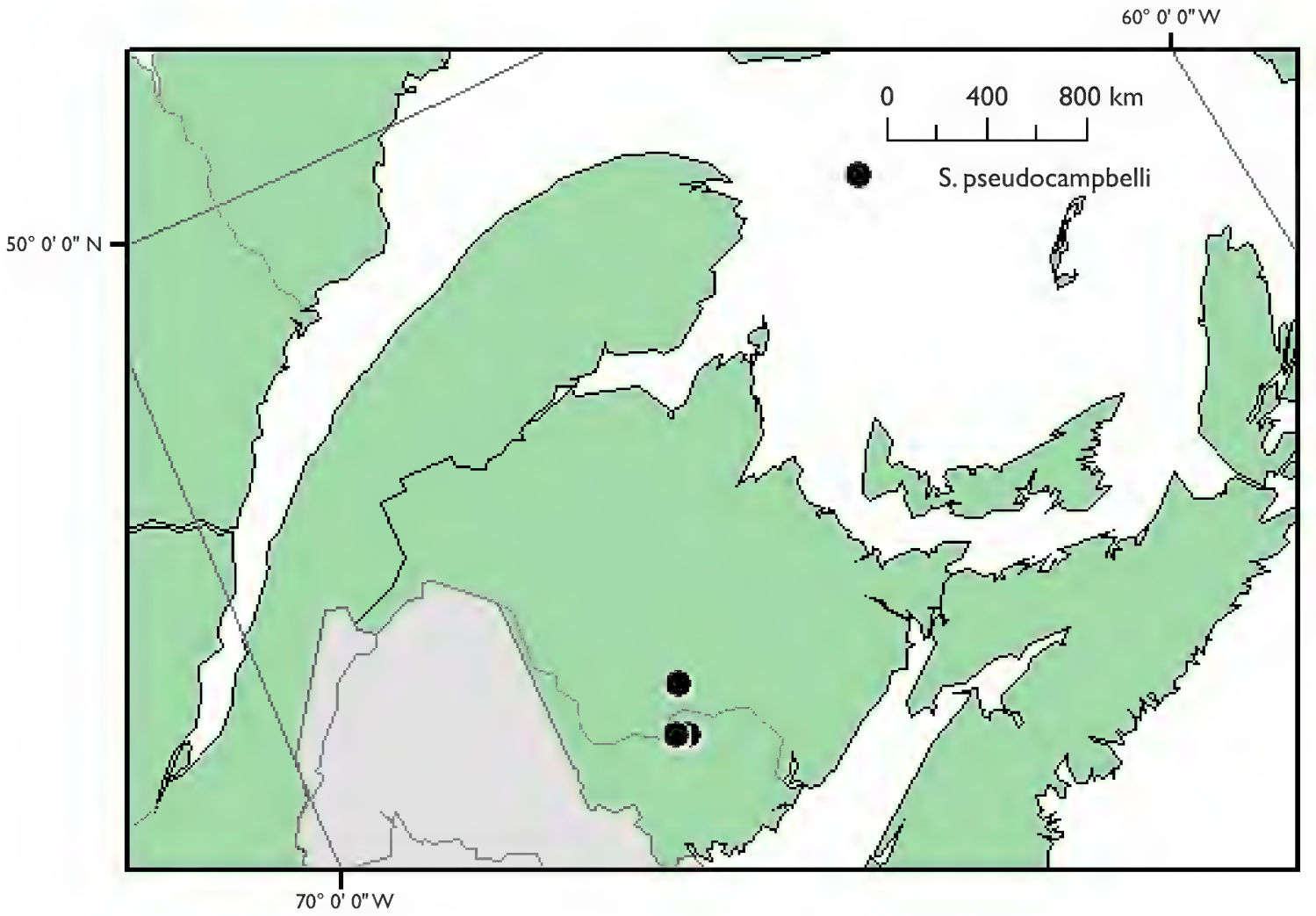
Diagnosis. Body length 2.7–2.9 mm, body narrowly subparallel, approximately uniformly dark brown, with legs and antennal bases paler, moderately glossy and moderately densely pubescent (Fig. 3); antennae with articles 5–10 slightly transverse (Fig. 3); tempora each as long as approximately three times the maximal diameter of eye as seen from above (Fig. 3); median lobe of aedeagus moderately broad, venter of tubus almost straight (Fig. 27), apical sclerites of internal sac V-shaped in dorsal view (Fig. 26); spermatheca L-shaped, with capsule tubular, stem moderately narrow and approximately straight (Fig. 30).

Description. Body length 2.7–2.9 mm, width 0.4 mm, approximately uniformly dark brown with slightly paler legs and antennal bases (Fig. 3); integument with microsculpture well pronounced, sculpticells irregularly hexagonal, pubescence short, except for slightly longer on head and abdomen, yellowish brown in artificial light, moderately dense. Head slightly elongate, rounded, feebly carinate basally, tempora as long as approximately three times the maximal diameter of an eye (Fig. 3); antennae with articles 1–3 strongly elongate and 5–10 moderately transverse (Fig. 3); pronotum transverse, broadly rounded laterally and posteriorly, broadest in basal half, pubescence directed anteriorly on apical third of the midline and obliquely laterally elsewhere (Fig. 3); elytra as long as pronotum at suture, strongly transverse, subparallel, hind margin slightly sinuate, pubescence directed straight posteriad (Fig. 3); abdomen parallel-sided, four basal tergites strongly impressed basally (Fig. 3)**. Male.** Median lobe of the aedeagus moderately broad and flattened, venter of tubus approximately straight with apex narrow (Fig. 27), apical sclerites of internal sac V-shaped in dorsal view (Fig. 26); paramere as illustrated (Fig. 25); tergite 8 transverse and broadly emarginate apically, apical margin feebly crenulate and with two large lateral teeth (Fig. 28); sternite 8 elongate and rounded posteriorly, slightly pointed medially, antecostal suture slightly pointed medially (Fig. 29). **Female.** Tergite 8 truncate apically and slightly emarginate medially (Fig. 31); sternite 8 broadly rounded apically and slightly pointed medially (Fig. 32). Spermatheca L-shaped, with tubular capsule, stem narrow and feebly sinuate and twisted posteriorly (Fig. 30).

Bionomics. Like other members of this genus, this species was most commonly captured in marshes or near wetlands. Adults were captured in *Carex* marshes in sphagnum hummocks, by treading sedge hummocks into water, sweeping foliage in *Carex* marsh, in grass and sphagnum at the base of alder in a marsh with grasses and alders,



Figures 25–32. *Schistoglossa pseudocampbelli*: **25** paramere **26** median lobe of aedeagus in dorsal view **27** median lobe of aedeagus in lateral view **28** male tergite 8 **29** male sternite 8 **30** spermatheca **31** female tergite 8 **32** female sternite 8.



Map 3. Collection localities in Canada of *S. pseudocampbelli.*

and along stream margins among cobblestones under alders or in litter. Adults were collected in April, May, and June.

Geographic distribution (Map 3). Known only from New Brunswick, Canada.

Comments. *Schistoglossa pseudocampbelli* has genital structures similar to those of *S. campbelli* and *S. brunswickensis* and is probably closely related to these species.

***Schistoglossa brunswickensis* Klimaszewski & Webster, sp. n.**
urn:lsid:zoobank.org:act:B248D56C-8C67-4617-A651-7E1A331AA7D9
Figs 4, 33–42, Map 4

Holotype (female): CANADA, New Brunswick, York Co., Rt. 645 at Beaver Brook, 45.6860°N, 66.8669°W, 3.V.2008, R.P. Webster coll., *Carex* marsh, in litter at base of dead red maple (LFC). **Paratypes:** CANADA, New Brunswick, York Co., Rt 645 at Beaver Brook, 45.6860°N, 66.8669°W, 3.V.2008, R.P. Webster coll., *Carex* marsh, in litter at base of dead red maple (LFC) 1 male, (RWC) 4 males, 2 females; same data except: 6.V.2008, *Carex* marsh, in grass and leaf litter at base of red maple (RWC) 2 males, 3 females, 1 sex?; Charters Settlement, 45.8427°N, 66.7234°W, 24.IV.2004, R.P. Webster coll., abandoned beaver pond, in moist grass litter on muddy soil (RWC) 1 male; Kingsclear Mazerolle Settle-

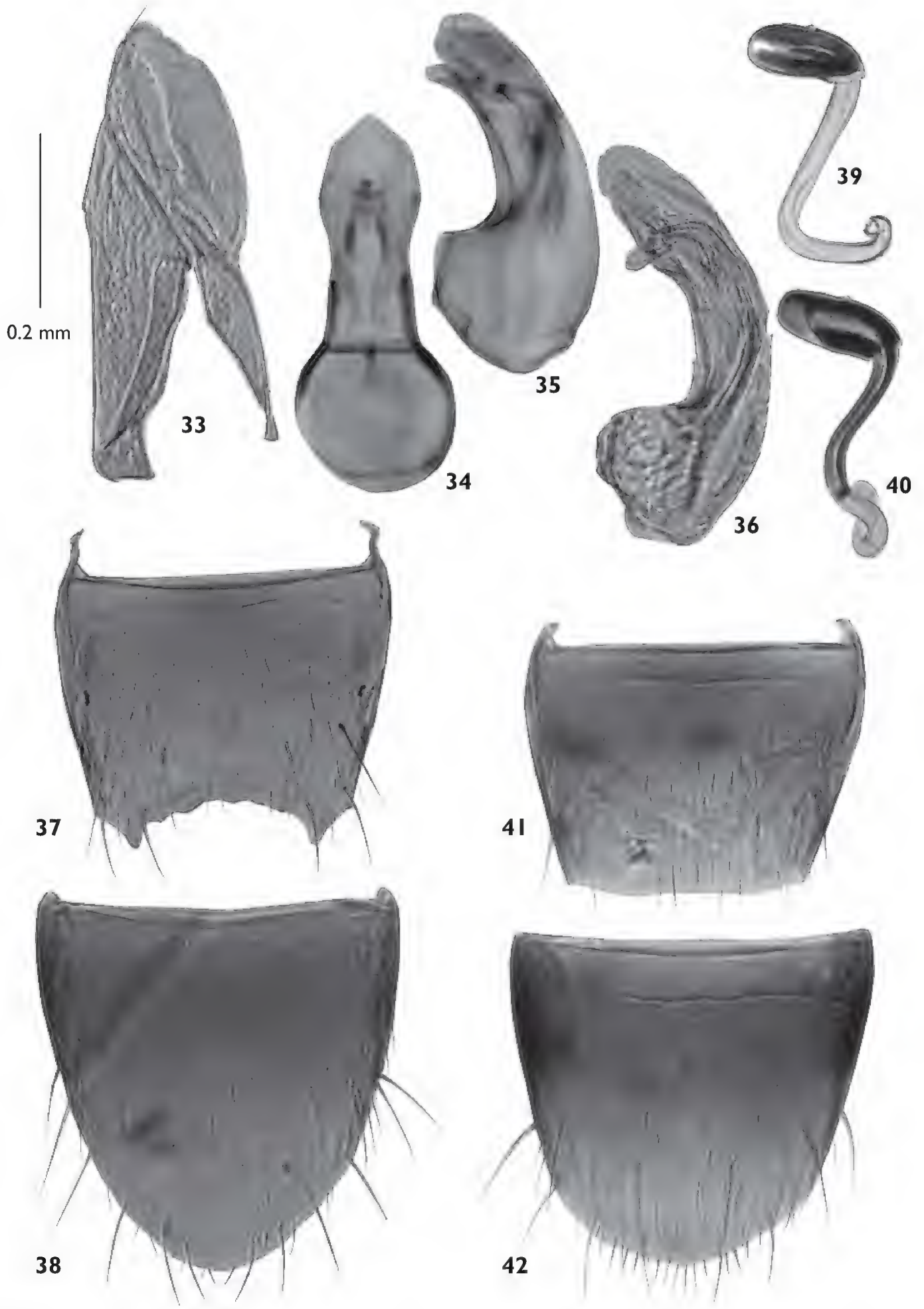
ment, 45.8729°N, 66.8311°W, 28.IV.2006, R.P. Webster coll., stream margin, in grassy litter on muddy soil (LFC) 1 male; Kelleys Creek at Sears Road, 45.8723 N, 66.8414 W, 7.VI.2008, R.P. Webster, coll., *Carex* marsh, treading vegetation into water (RWC) 2 males. Ontario, Rondeau Provincial Park, Marsh Trail, 2.VI.1985, A. Davies and J.M. Campbell, tread *Typha* in marsh (CNC) 1 female, 2 sex?. Quebec, Gatineau Park, Ramsay Lake, 11.V.1982, *Carex*, A. Davies (CNC) 1 male.

Etymology. The name of this species derives from the province of New Brunswick, where the original series was captured. New Brunswick, in turn, was named in honour of the German city of Brauschweig in Lower Saxony, the ancestral home of the British monarch, George III (1738–1820). Gender masculine.

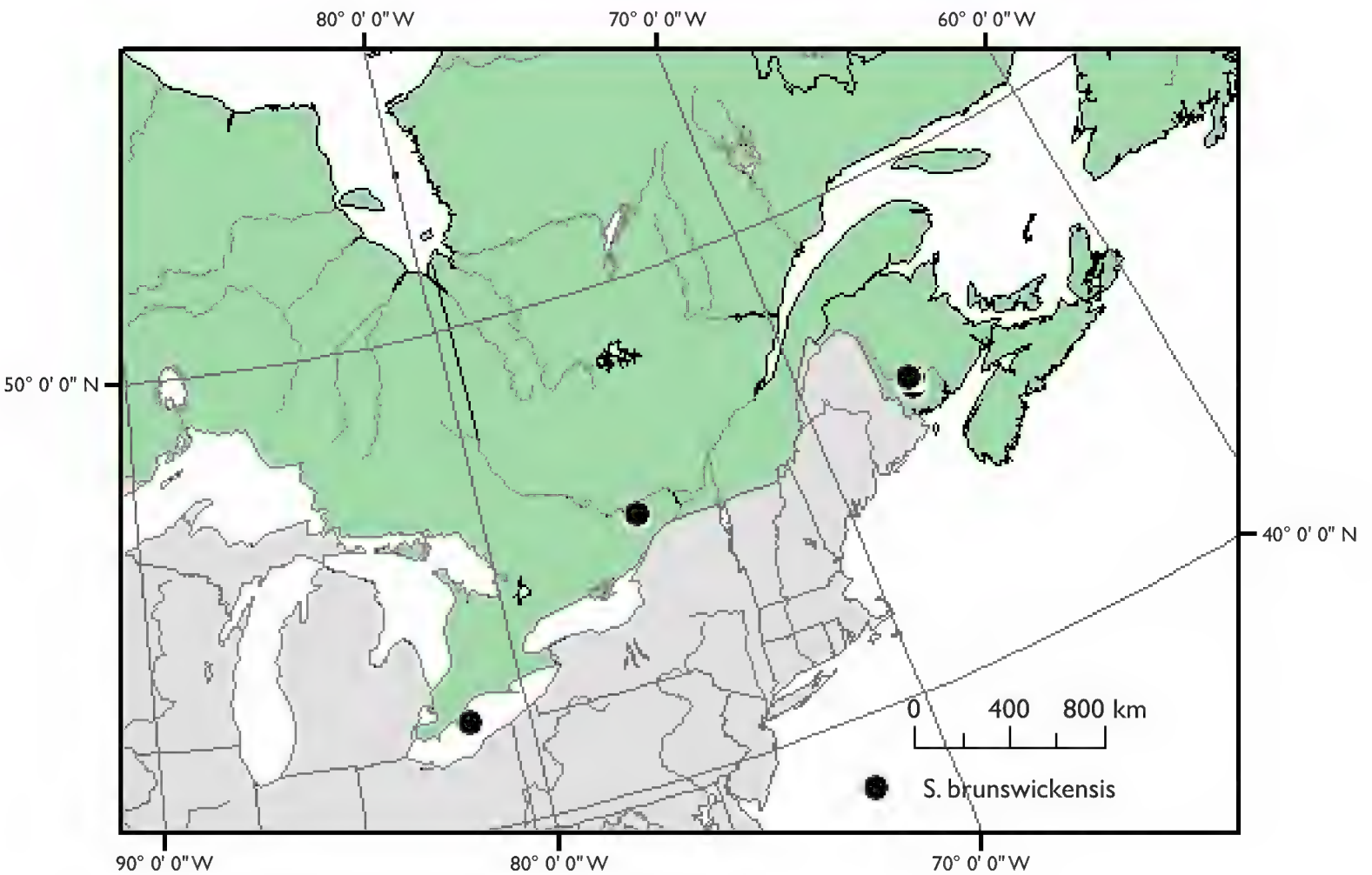
Diagnosis. Small species, length 1.8–2.1 mm, body narrowly subparallel, approximately uniformly dark brown, with tarsi or entire legs, bases of antennae and mouthparts paler, moderately glossy and moderately densely pubescent (Fig. 4); antennae slim, articles 5–10 slightly to strongly transverse (Fig. 4); tempora each about as long as three times maximal diameter of eye as seen from above (Fig. 4); median lobe of aedeagus moderately broad, venter of tubus arcuate (Fig. 35), apical sclerites of internal sac V-shaped in dorsal view (Fig. 34); spermatheca S-shaped, with capsule tubular, stem moderately narrow and angularly bent posteriad (Fig. 39). Except for protruding eyes, slightly more transverse pronotum, and longer body, this species is not externally distinguishable from *S. hampshirensis*.

Description. Body length 1.8–2.1 mm, width 0.3–0.4 mm, approximately uniformly dark brown with tarsi or entire legs, base of antennae and mouthparts paler (Fig. 4); integument with weak microsculpture, sculpticells irregularly hexagonal, pubescence short, except for slightly longer on head and abdomen, yellowish-brown in artificial light, moderately dense. Head approximately round, feebly carinate basally, tempora as long as approximately three times the maximal diameter of eye seen from above (Fig. 4); antennae slim with articles 5–10 from moderately transverse (Fig. 4); pronotum strongly transverse, broadly rounded laterally and posteriorly, broadest in basal half, pubescence directed anteriorly on apical third of the midline and obliquely laterally elsewhere (Fig. 4); elytra short, strongly transverse, subparallel, hind margin approximately straight, pubescence directed straight posteriad (Fig. 4); abdomen parallel-sided, three basal tergites strongly impressed basally (Fig. 4). **Male.** Tergite 8 emarginate apically with irregular crenulation and two large lateral teeth (Fig. 20); sternite 8 elongate and slightly produced apically (Fig. 38). Median lobe of aedeagus moderately broad, less than in other species of the genus, and flattened, venter of tubus arcuate, apex slightly produced ventrally (Figs 35, 36), apical sclerites of internal sac V-shaped in dorsal view (Fig. 34); paramere as illustrated (Fig. 33). **Female.** Tergite 8 truncate apically (Fig. 41); sternite 8 broadly rounded apically (Fig. 42). Spermatheca S-shaped, with tubular capsule, and stem angularly bent posteriorly (Fig. 39). Aberrant form of spermatheca is shown in Fig. 40.

Bionomics. Adults were captured in *Carex* and *Typha* marshes, in litter and grass at the base of dead red maples, in a *Carex* marsh (probably an overwintering site), tread-



Figures 33–42. *Schistoglossa brunswickensis*: **33** paramere **34** median lobe of aedeagus in dorsal view **35, 36** median lobe of aedeagus in lateral view **37** male tergite 8 **38** male sternite 8 **39** typical form of spermatheca **40** aberrant form of spermatheca **41** female tergite 8 **42** female sternite 8.



Map 4. Collection localities in Canada of *S. brunswickensis*.

ing vegetation in a *Carex* marsh, in moist grass litter on muddy soil at a beaver pond and bank of a stream, in April, May, and June.

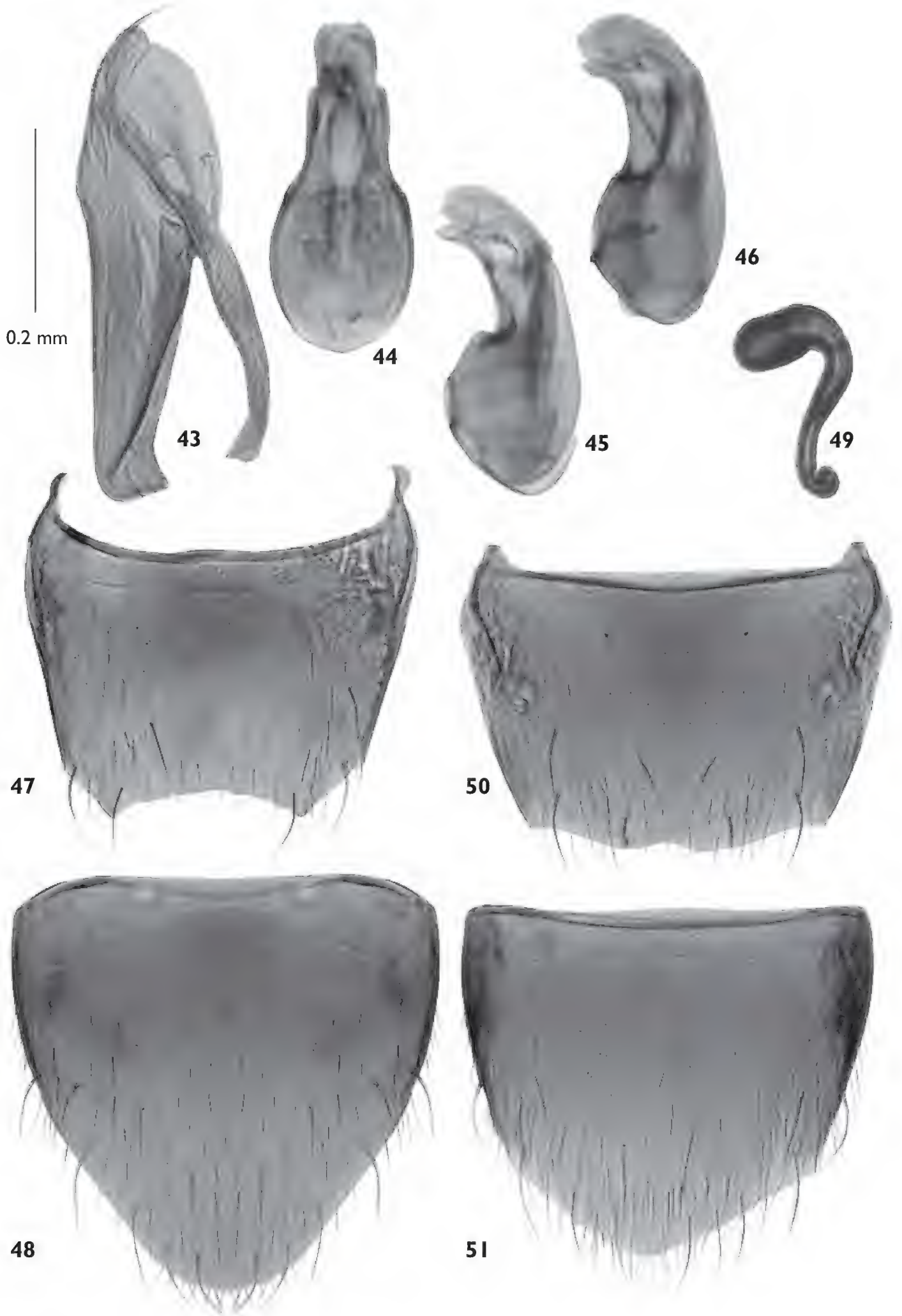
Geographic distribution (Map 4). Known from Ontario, Quebec and New Brunswick, Canada.

Comments. *Schistoglossa brunswickensis* has genital structures similar to *S. charlottae* and *S. hampshirensis* and is probably closely related to these species.

Schistoglossa hampshirensis Klimaszewski, sp. n.

urn:lsid:zoobank.org:act:BBB4EE49-2CD0-497D-80EE-4B52C3484C47
Figs 5, 43–51, Map 5

Holotype (female): UNITED STATES, New Hampshire, Coos Co., Mt. Washington, above tree line, 5200–5700 feet, 10.IX.1987, J.M. Campbell and A. Davies, dwarf *Salix*, *Vaccinium*, leather-leaf litter (CNC). **Paratypes:** CANADA, Quebec, Parc Gaspésie, Mount Albert, 20–21.VII.1972, 3700 feet, J.M. Campbell (LFC) 1 female. UNITED STATES, New Hampshire, Coos Co., Mt. Washington, above tree line, 5200–5700 feet, 10.IX.1987, J.M. Campbell and A. Davies, dwarf *Salix*, *Vaccinium*, leather-leaf litter (CNC) 4 males, 3 sex?, (LFC) 1 male, 1 female, 1 sex?; Mt. Washington, Alpine Garden, 5300 feet, 12.IX.1987, J.M. Campbell and A. Davies, sifting dwarf *Salix* litter



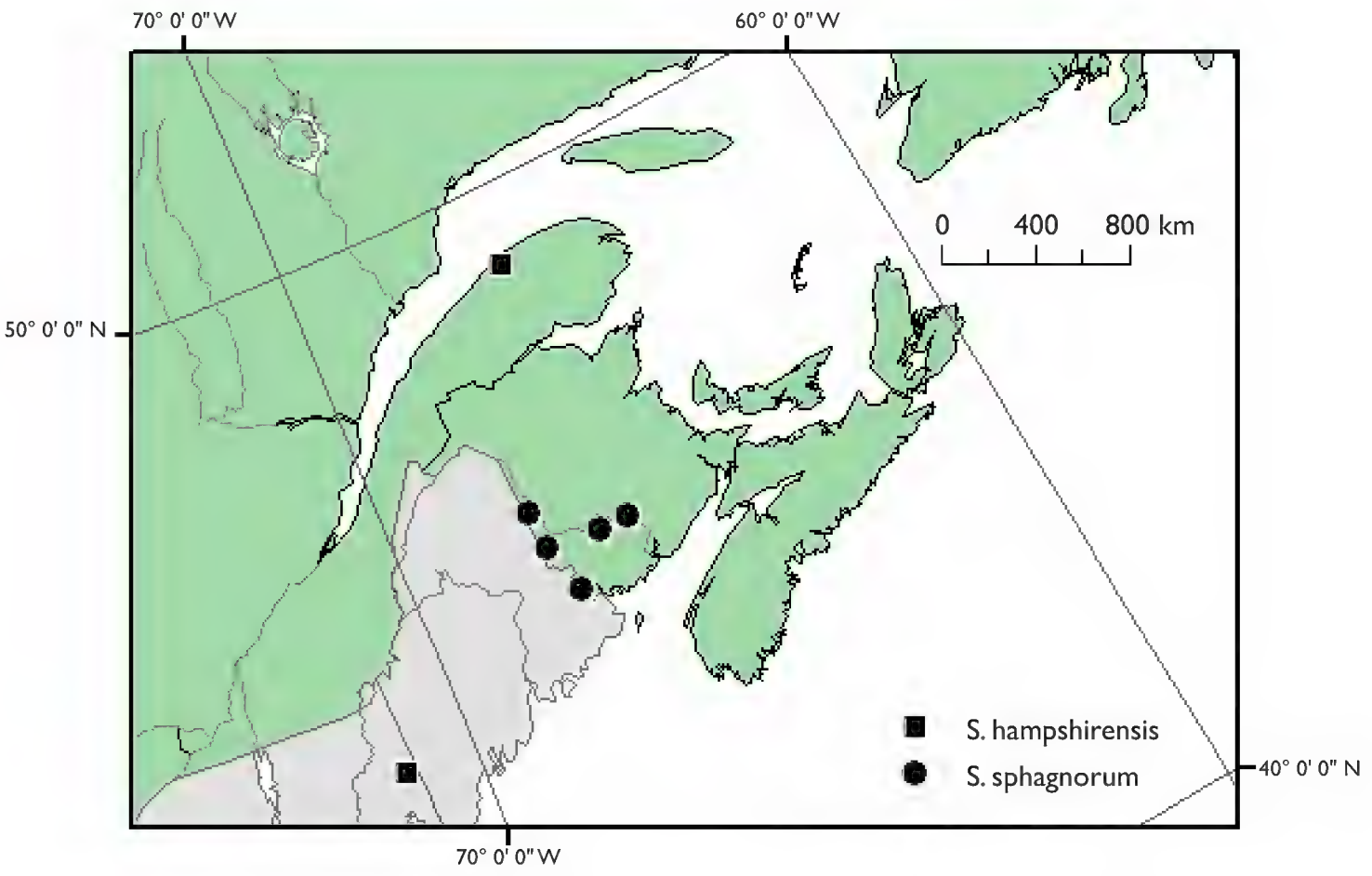
Figures 43–51. *Schistoglossa hampshirensis*: **43** paramere **44** median lobe of aedeagus in dorsal view **45, 46** median lobe of aedeagus in lateral view **47** male tergite 8 **48** male sternite 8 **49** spermatheca **50** female tergite 8 **51** female sternite 8.

(CNC) 1 female, 1 sex?; Mt. Washington, Crawford Path, 5500 feet, 10.IX.1987, A. Davies, sifting *Vaccinium*, leather-leaf litter with moss and grasses (CNC) 1 male, (LFC) 1 female; Gorham, 10.IX.1987, L. LeSage and E. Rickey, ex pile of red oak wood chips and dust near river (CNC) 1 male.

Etymology. The specific name *hampshirensis*, an adjective derived from the state of New Hampshire, where the species was found. New Hampshire, in turn, was named after the county of Hampshire in England. Gender masculine.

Diagnosis. The smallest *Schistoglossa* species, length 1.8–1.9 mm, body narrowly subparallel, approximately uniformly dark brown, with tarsi, antennal bases and mouthparts paler, moderately glossy and moderately densely pubescent (Fig. 5); antennae slim, articles 5–10 slightly transverse (Fig. 5); tempora each about as long as three times the maximal diameter of eye as seen from above (Fig. 5); median lobe of aedeagus moderately broad, venter of tubus arcuate (Figs 45, 46), apical sclerites of internal sac V-shaped in dorsal view (Fig. 44); spermatheca S-shaped, with capsule tubular, stem moderately narrow and sinuate (Fig. 49). Except for slightly less transverse pronotum, this species is not externally distinguishable from *S. brunswickensis*.

Description. Body length 1.8–1.9 mm, width 0.3 mm, approximately uniformly dark brown with tarsi, antennal bases and mouthparts paler (Fig. 5); integument with weak microsculpture, sculpticells irregularly hexagonal, pubescence short, except for slightly longer on head and abdomen, yellowish-brown in artificial light, moderately dense. Head approximately round and slightly elongate, feebly carinate basally, tempo-



Map 5. Collection localities in Canada and the United States of *S. hampshirenis* and *S. sphagnorum.*

ra approximately as long as three times the maximal diameter of eye (Fig. 5); antennae slim with articles 5–10 moderately transverse (Fig. 5); pronotum slightly transverse, broadly rounded laterally and posteriorly, broadest in basal half, pubescence directed anteriorly on apical third of the midline and obliquely laterally elsewhere (Fig. 5); elytra short and strongly transverse, subparallel, hind margin approximately straight, pubescence directed obliquely or straight posteriad (Fig. 5); abdomen parallel-sided, three basal tergites strongly impressed basally (Fig. 5). **Male.** Tergite 8 slightly emarginated apically and bearing irregular crenulation and two larger lateral teeth (Fig. 47); sternite 8 elongate and slightly produced apically (Fig. 48). Median lobe of the aedeagus moderately broad and flattened, venter of tubus arcuate, apex slightly produced ventrally (Figs 45, 46), apical sclerites of internal sac V-shaped in dorsal view (Fig. 44); paramere as illustrated (Fig. 43). **Female.** Tergite 8 truncate apically and bearing minute emargination (Fig. 50); sternite 8 broadly rounded apically and pointed (Fig. 51). Spermatheca S-shaped, with tubular capsule, stem narrow and sinuate (Fig. 49).

Bionomics. Adults were captured in *Salix*, *Vaccinium* and *Chamaedaphne* leaf litter, in July and September. The New Hampshire specimens were collected at elevations of 5200–5700 feet and the only Quebec specimen was found on Mount Albert at 3,700 feet, suggesting possible northern affiliation for this species. The New Brunswick specimen was captured in eastern white cedar swamp, in moss and leaf litter near a brook in April.

Geographic distribution (Map 5). Known from Quebec and New Brunswick in Canada and New Hampshire in the United States.

Comments. *Schistoglossa hampshirensis* has genital structures similar to those of *S. campbelli*, to which it is probably closely related.

II. Subgenus *Schistoglossa* (*Boreomorpha*) Klimaszewski & Webster, subgen. n.

urn:lsid:zoobank.org:act:8267555B-8CD5-46A1-AB6E-40E7DBD17C2A

Figs 6–8, 52–75

Type species: *Schistoglossa sphagnorum* Klimaszewski & Webster, sp. n., present designation.

Diagnosis. The subgenus *Boreomorpha* may be characterized by the following combination of characters: antennal articles 5–10 slightly elongate (Figs 6–8); eyes moderately-sized (Figs 6–8); postocular area well developed and about as long as twice the maximal diameter of eye as seen from above (Figs 6–8); postocular carina weak, present only basally or obsolete; median lobe of aedeagus with bulbus and tubus streamlined in dorsal view (Figs 53, 61, 69), internal sac without V-shaped structure typical for the subgenus *sensu stricto* but with two lunar-shaped subapical structures easily visible in lateral view (Figs 53, 62, 70); male tergite 8 broadly arcuate apically, apical margin entire and without lateral teeth and crenulation (Figs 55, 63, 71); spermatheca club-shaped and with approximately spherical capsule (Figs 57, 65, 73).

This group contains species that bear some transitional characters between *Schistoglossa* and *Boreophilia* but are placed in the former genus on the grounds of mandibu-

lar structures (2 + 3 teeth), consistent with the remaining *Schistoglossa* species and the generic type *S. viduata* (Erichson) (Figs 76, 77, 79, 80). Additional studies are needed to verify the status of all species currently placed in the genus *Boreophilia*.

Schistoglossa sphagnorum Klimaszewski & Webster, sp. n.

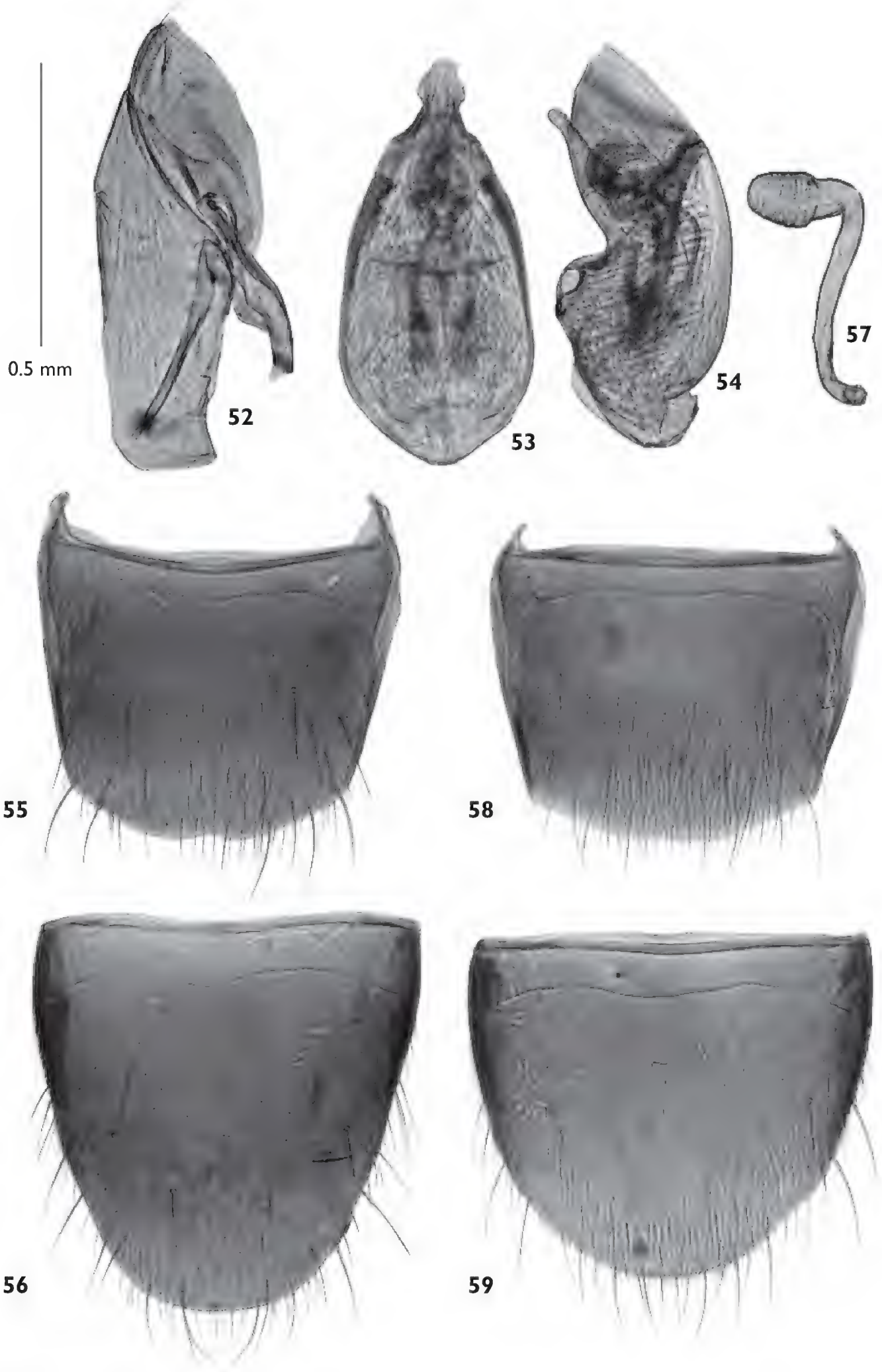
urn:lsid:zoobank.org:act:F98EEE5E-3C2F-497C-96FB-ED7D2A839324
Figs 52–59, Map 5

Holotype (female): CANADA, New Brunswick, York Co., Charters Settlement, 45.8267°N, 66.7343°W, 16.IV.2005, R.P. Webster coll., *Carex* marsh in sphagnum hummocks (LFC). **Paratypes:** CANADA, New Brunswick: Charlotte Co., 3.0 km NW of Pomeroy Ridge, 45.3059′N, 67.4343′W, 5.VI.2008, R.P. Webster, coll., alder swamp (adjacent to eastern white cedar swamp) in moss hummocks with grasses (RWC) 1 female. York Co., Charters Settlement, 45.8267′N, 66.7343′W, 16.IV.2005, R.P. Webster coll., *Carex* marsh in sphagnum hummocks (LFC) 1 male; same locality data, 29.III.2006, R.P. Webster, *Carex* marsh in litter and sphagnum at base of tree (RWC) 1 male; same locality data, 9.IV.2005, R.P. Webster, *Carex* marsh in sphagnum hummock; same locality data,16. IV.2005, R.P. Webster, coll., *Carex* marsh in litter and sphagnum at base of tree, (RWC) 3 males; same locality data, 30.IV.2005, R.P. Webster coll., *Carex* marsh in sphagnum hummock (RWC) 1 female; same locality data, 14.V.2005, R.P. Webster, *Carex* marsh in litter and sphagnum at base of tree (RWC) 1 male, 1 female; Canterbury, "Browns Mtn. Fen", 45.8967°N, 67.6343°W, 2.V.2005, M. Giguère and R.P. Webster coll., calcareous cedar fen in moist sphagnum in area with sedges (LFC) 1 male, (RWC) 2 females. Carleton Co., Wilmot "Two Mile Brook Fen", 46.3619°N, 67.6730°W, 6.V.2005, M. Giguère and R.P. Webster coll., calcareous cedar fen, open area with sedges in *Sphagnum* in *Carex* hummock (RWC) 1 male, 1 female. Queens Co., near Upper Gagetown in bog adjacent to Hwy 2, 45.8316°N, 66.2346°W, 12.IV.2006, R.P. Webster, coll., tamarack bog in sphagnum hummock at bog margin (RWC) 1 female.

Etymology. *Sphagnorum* is an adjective derived from *Sphagnum*, the major plant constituent of the habitat where the species was typically found. Gender masculine.

Diagnosis. Medium-sized species, length 2.3–2.5 mm, body narrow and subparallel, approximately uniformly dark brown, moderately glossy and moderately densely pubescent (Fig. 6); antennae robust, all articles elongate (Fig. 6); tempora each as long as about three times the maximal diameter of eye (Fig. 6); median lobe of aedeagus broad (Fig. 53), venter of tubus sinuate (Fig. 54), apical sclerites of internal sac lunar-shaped in lateral view (Fig. 54); spermatheca S-shaped with capsule narrowly spherical, bearing internal ribbings and without apical invagination, stem moderately narrow and sinuate (Fig. 57).

Description. Body length 2.3–2.5 mm, width 0.4–0.5 mm, approximately uniformly dark brown with slightly darker head and abdomen, and paler legs and mouthparts (Fig. 6); integument with weak microsculpture, sculpticells irregularly hexagonal, pubescence short, except slightly longer on head and abdomen, yellowish-brown in artificial



Figures 52–59. *Schistoglossa sphagnorum*: **52** paramere **53** median lobe of aedeagus in dorsal view **54** median lobe of aedeagus in lateral view **55** male tergite 8 **56** male sternite 8 **57** spermatheca **58** female tergite 8 **59** female sternite 8.

light, moderately dense. Head slightly elongate, rounded posteriorly, carinate basally, tempora as long as approximately three times maximal diameter of eye (Fig. 6); antennae robust and all articles slightly to strongly elongate (Fig. 6); pronotum transverse, broadly rounded laterally and posteriorly, broadest in apical half, pubescence directed anteriorly on apical third of the midline and laterally elsewhere (Fig. 6); elytra short, as long as pronotum, transverse, hind margin nearly straight, pubescence directed obliquely posteriad (Fig. 6); abdomen parallel-sided, four basal tergites deeply impressed basally (Fig. 6). **Male.** Median lobe of the aedeagus broad and flattened (Fig. 53), venter of tubus sinuate and apex narrow (Fig. 54), apical sclerites of internal sac lunar-shaped in lateral view (Fig. 54), and basal sclerites narrowly elongate (Fig. 53); paramere as illustrated (Fig. 52); tergite 8 transverse and entire, apical margin without or with small emargination (Fig. 55); sternite 8 elongate and rounded posteriorly, antecostal suture sinuate and pointed medially (Fig. 56). **Female.** Spermatheca S-shaped with capsule narrowly spherical, bearing internal ribbings and without apical invagination, stem moderately narrow and sinuate (Fig. 57). Tergite and sternite 8 as illustrated (Figs 58, 59).

Bionomics. *Schistoglossa sphagnorum* appears to be associated with open, sun-exposed calcareous eastern white cedar (*Thuja occidentalis* L.) fens with shrubby cinquefoil (*Pentaphylloides floribunda* (Pursh) A. Love), circumneutral *Carex* fens adjacent to areas with eastern white cedar, and tamarack bogs or fens, rather than true acidic bogs (e.g. black spruce, *Picea mariana* (Mill.) BSP, bogs). Adults of this species were captured in *Sphagnum* (by treading or sifting *Sphagnum*) in these habitats. Adults were captured in moist *Sphagnum* in *Carex* hummocks and in sphagnum and litter at the base of trees near the margin of *Carex* marshes (circumneutral fens) and in eastern white cedar fens, or in *Sphagnum* hummocks near the margin of a tamarack (*Larix laricina* (Du Roi) Koch) fen or bog. In New Brunswick, this species becomes active very early in the spring (late March and May) shortly after the snow has melted in open sun-exposed areas (these may be overwintering sites for this species) and when snow is often still present in the adjacent forests.

Geographic distribution (Map 5). Known only from New Brunswick, but probably more broadly distributed in northern Canada.

Comments. *Schistoglossa sphagnorum* is externally similar to the other members of this genus but the shape of the apical part of the median lobe in lateral view and the shape of the spermatheca are distinct despite overall similarity to those of *S. carexiana* and *S. blatchleyi.*

Schistoglossa carexiana **Klimaszewski, sp. n.**
urn:lsid:zoobank.org:act:AD67911A-6C81-4A64-AA0E-C8E15289DB26
Figs 7, 60–67, Map 6

Holotype (female): CANADA, British Columbia, Queen Charlotte Is., 8.8 km SW Tow Hill, J.M. Campbell; 22.VIII.1983, 83–108, treading *Sphagnum* & *Carex* at edge of marsh (CNC). **Paratypes:** CANADA, British Columbia, Queen Charlotte Is., 8.8

km SW Tow Hill, J.M. Campbell; 22.VIII.1983, 83–108, treading *Sphagnum* & *Carex* at edge of marsh (CNC) 2 males, 4 females, (LFC) 2 males, 1 female.

Etymology. *Carexiana*, an adjective derived from *Carex*, the major plant constituent of the habitat where the species was found. Gender feminine.

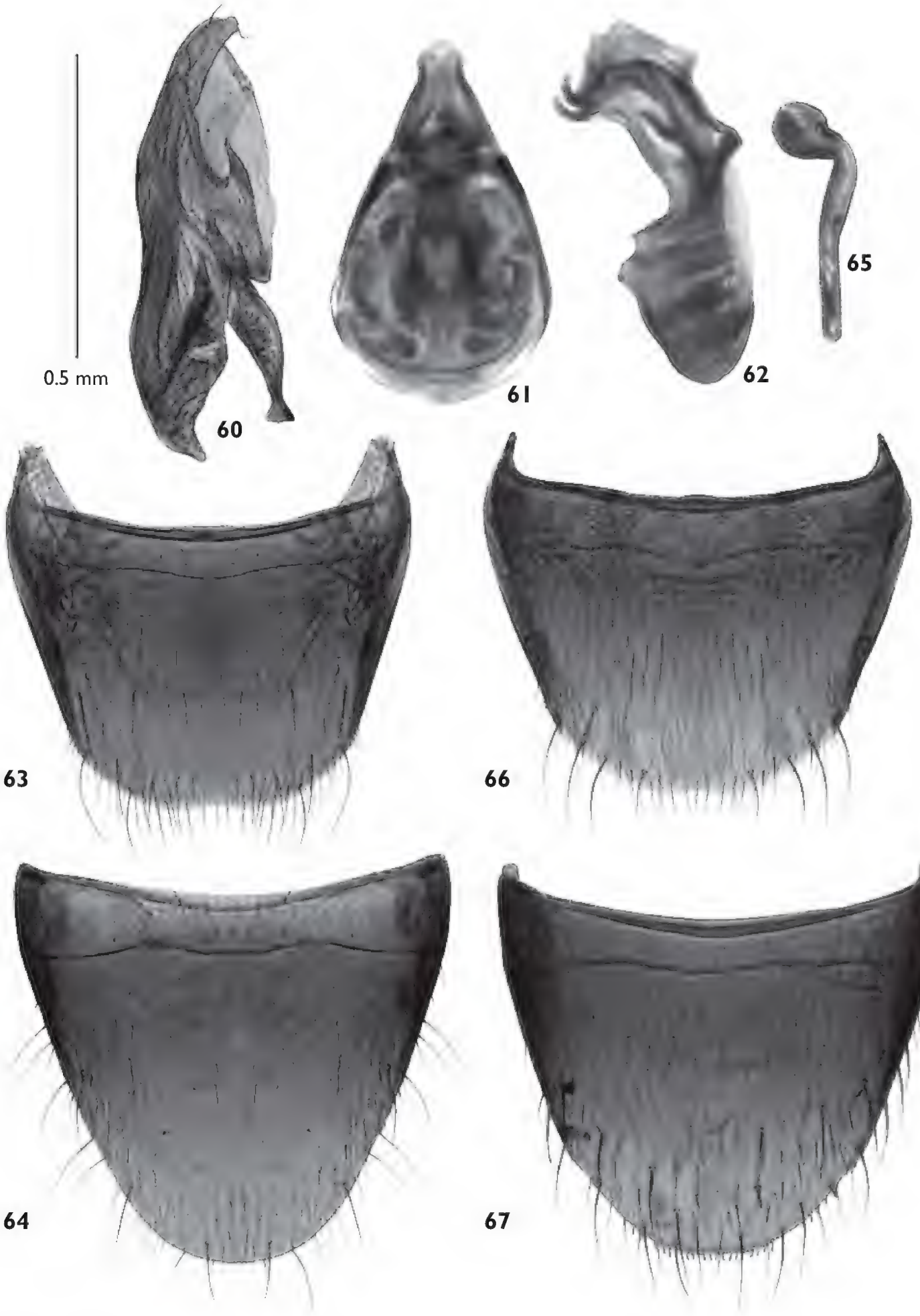
Diagnosis. Medium-sized species, length 2.8–3.0 mm, the largest in this genus, body moderately broad and subparallel, approximately uniformly dark brown, moderately glossy and moderately densely pubescent (Figs 7); antennae slim, all articles strongly elongate (Fig. 7); tempora each approximately as long as twice the maximal diameter of eye as seen from above (Fig. 7); elytra broadening posteriorly (Fig. 7); median lobe of aedeagus broad (Fig. 61), venter of tubus slightly sinuate (Fig. 62), apical sclerites of internal sac lunar-shaped in lateral view (Fig. 62); spermatheca club-shaped with capsule spherical and narrowed basally, bearing internal ribbings and without apparent apical invagination, stem moderately narrow and straight (Fig. 65).

Description. Body length 2.8–3.0 mm, width 0.4–0.5 mm, approximately uniformly dark brown with slightly paler tip of abdomen, legs, antennae, and mouthparts (Fig. 7); integument with weak microsculpture, sculpticells irregularly hexagonal, pubescence short, except slightly longer on head and abdomen, yellowish-brown in artificial light, moderately dense. Head slightly elongate, rounded posteriorly, carinate basally, tempora approximately as long as twice the maximum diameter of eye as seen from above (Fig. 7); antennae slim with all articles elongate (Figs 7); pronotum slightly transverse, broadly rounded laterally and posteriorly, broadest in apical half, pubescence directed anteriorly on apical third of the midline and laterally forming arched lines elsewhere (Fig. 7); elytra strongly transverse, and broadening posteriorly, hind margin nearly straight, pubescence directed obliquely posteriad (Fig. 7); abdomen parallel-sided, three basal tergites deeply impressed basally (Fig. 7). **Male.** Median lobe of the aedeagus broad and flattened (Fig. 61), venter of tubus sinuate, apex projected ventrally (Fig. 62), apical sclerites of internal sac lunar-shaped in lateral view (Fig. 62), and basal sclerites narrowly elongate; paramere as illustrated (Fig. 60); tergite 8 transverse and entire, apical margin without or with small emargination (Fig. 63); sternite 8 elongate and rounded posteriorly, antecostal suture sinuate (Fig. 64). **Female.** Spermatheca club-shaped with capsule spherical, bearing internal ribbings and without apparent apical invagination, stem moderately narrow and approximately straight (Fig. 65). Tergite and sternite 8 as illustrated (Figs 66, 67).

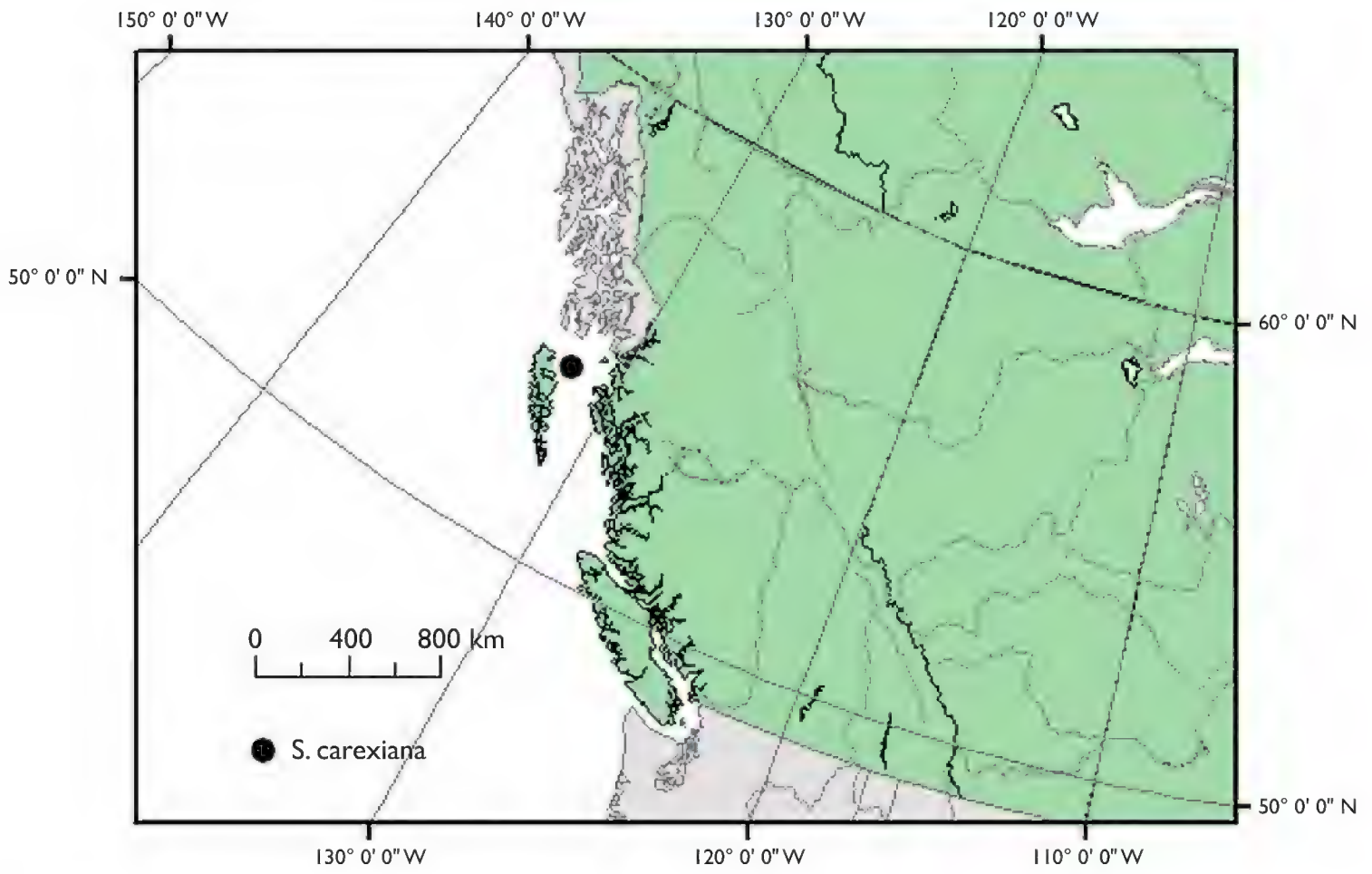
Bionomics. Adults were captured by treading *Sphagnum* and *Carex* at edge of marsh in August.

Geographic distribution (Map 6). Known only from the Queen Charlotte Islands of British Columbia, Canada.

Comments. *Schistoglossa carexiana* is distinct by its broad body and strongly elongate antennal articles. It has a median lobe of the aedeagus and spermatheca similar to *S. blatchleyi* and *S. sphagnorum*.



Figures 60–67. *Schistoglossa carexiana*: **60** paramere **61** median lobe of aedeagus in dorsal view **62** median lobe of aedeagus in lateral view **63** male tergite 8 **64** male sternite 8 **65** spermatheca **66** female tergite 8 **67** female sternite 8.



Map 6. Collection localities in Canada of *S. carexiana.*

***Schistoglossa blatchleyi* (Bernhauer & Scheerpeltz, 1926: 639) comb. n.**
Figs 8, 68–75, Map 7

Atheta blatchleyi (Bernhauer and Scheerpeltz, 1926: 639), replacement name for preoccupied *Atheta* (s. str.) *caviceps* Blatchley, 1910: 354; Gouix and Klimaszewski 2007: 72 (CANADA, Northwest Territories, Yukon Territory, Manitoba, **Ontario**, **Quebec**, Newfoundland, **New Brunswick**; UNITED STATES: Alaska, Indiana). **comb. n.**

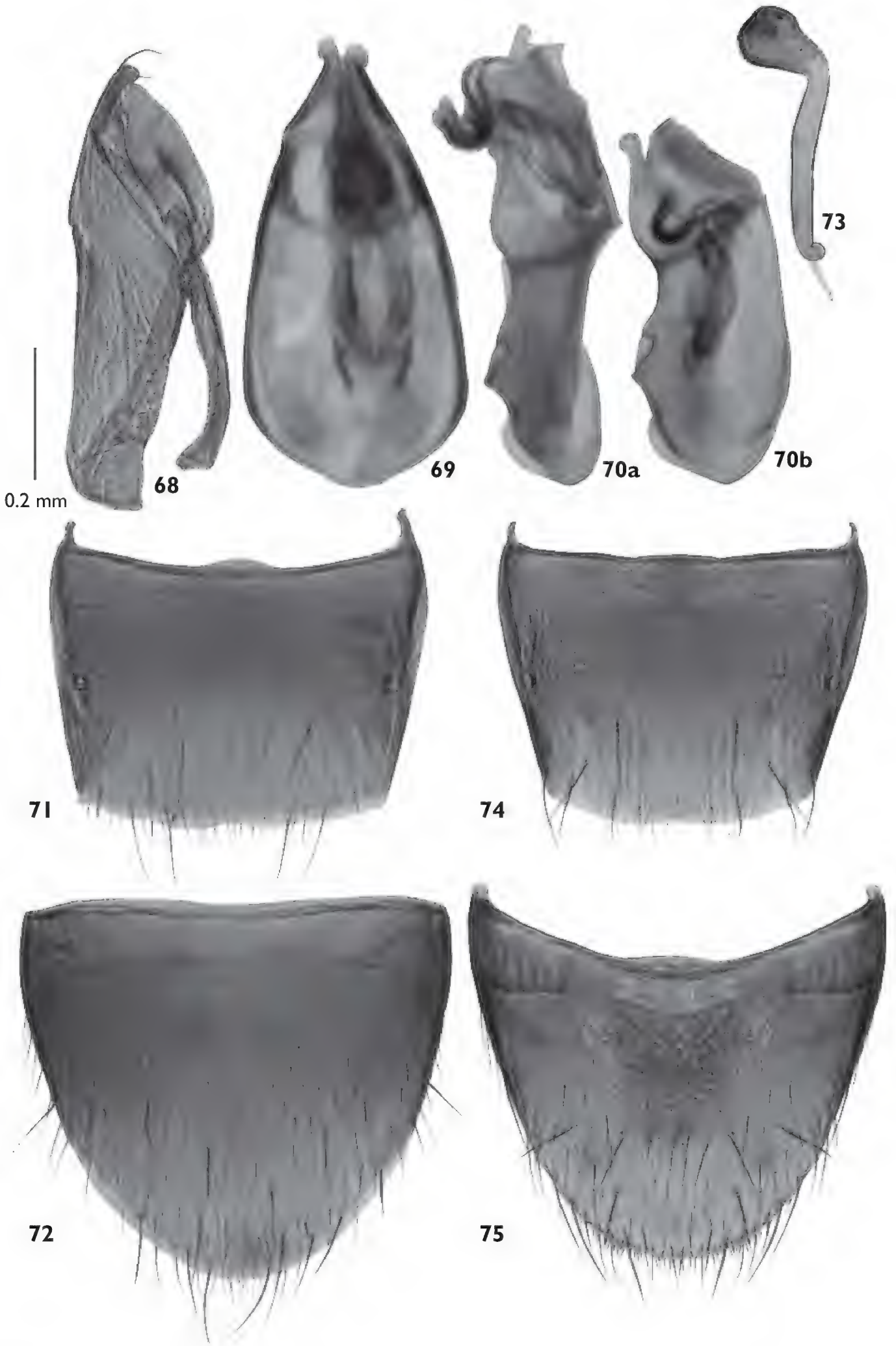
Boreophilia chillcotti Lohse, 1990: 157 (in Lohse et al. 1990) (=*Schistoglossa*). Synonymized by Gusarov 2003a: 76 (as *Atheta*).

Material examined. CANADA, Ontario: Sudbury Co., Mattagami, 23.VIII.1980, leg. R. Baranowski (LUC) 1 female; Mattagami, 27.VIII.1980, leg. R. Baranowski (LUC) 1 male, (LFC) 1 male; 40 km NE Mattagami River, 26.VIII.1980, leg. R. Baranowski (LUC) 1 female. Quebec: Hull, Gatineau Park, near Kidder Lake, 17.VIII. 1980, leg. R. Baranowski (LUC) 1 female. New Brunswick: Charlotte Co., near New River, 45.1616°N, 66.6649°W, 7.VIII.2006, R.P. Webster, coll., sedge marsh, treading sedges into water (RWC), 1 female. Queens Co., Upper Gagetown, bog adjacent to Hwy 2, 45.8316°N, 66.2346°W, 12.IV.2006, R.P. Webster, coll., tamarack bog, in sphagnum hummocks in litter at bog margin (RWC), 1 male, 1 female; Grand Lake near Scotch-

town, 45.8762°N, 66.1816°W, 30.IV.2006, R.P. Webster, coll., oak forest near lake in leaves at base of oak (RWC), 1 female. Sunbury Co., Burton, W of Sunpoke Lake, 45.7589°N, 66.5779°W, 22.IV.2006, red maple swamp, in moist leaves near vernal pool (RWC), 1 male; Burton, Sunpoke Lake, 45.7575°N, 66.5736°W, 10.IV.2006, red maple swamp, in leaf litter at base of tree (probably an overwintering site) (RWC), 1 male, 1 female. York Co., Charters Settlement, 45.8267°N, 66.7343°W, 16.IV.2005, R.P. Webster, coll., *Carex* marsh, in *Sphagnum* hummocks (RWC), 2 males; same locality data and collector, 14.V.2005, 29.III.2006, *Carex* marsh, sifting litter and moss at base of tree on margin of marsh (RWC), 2 males, 1 female; Fredericton, Nashwaaksis River at Rt. 105, 45.9850°N, 66.6900°W 6.V.2006, river margin, in flood debris on upper margin of river (RWC) 1 female; Canterbury, "Browns Mtn. Fen", 45.8967°N, 67.6343°W, 2.V.2005, M. Giguère and R.P. Webster coll., calcareous cedar fen, in moss and litter at base of tree (RWC) 1 male; Rt. 645 at Beaver Brook, 45.6860°N, 66.8668°W, 6.V.2008, R.P. Webster, coll., *Carex* marsh in litter at base of dead red maple (probably an overwintering site) (RWC) 1 male, 1 female; 8.4 km W of Tracy off Rt. 645, 45.6821°N, 66.7894°W, 6.V.2008, 14.V.2008, R.P. Webster, coll., wet alder swamp in leaf litter and grass on hummocks (RWC) 3 males, 2 females; 15.5 km W of Tracy off Rt. 645, 45.6845°N, 66.8826°W, 10.V.2008, wet sphagnum bog/marsh with scattered sedges near red pine forest, treading (RWC) 1 male, 1 female. Yukon Territory: Dempster Hwy, mi 26, 18.VII.1978, 2700 feet, A. Smetana and J.M. Campbell (CNC) 1 female.

Diagnosis. Medium-sized species, length 2.7–2.8 mm, body narrow and subparallel, approximately uniformly dark brown, moderately glossy and moderately densely pubescent (Fig. 8); antennae robust, all articles elongate (Fig. 8); tempora each approximately twice the maximal diameter of eye as seen from above (Fig. 8); median lobe of aedeagus broad (Fig. 69), venter of tubus sinuate and apex blunt (Fig. 70), apical sclerites of internal sac lunar-shaped in lateral view (Fig. 70); spermatheca club-shaped with capsule spherical and narrowed basally, bearing internal ribbings and with broad apical invagination, stem moderately narrow and approximately straight (Fig. 73). This species is very similar to *S. sphagnorum* but has a proportionately longer elytra (Fig. 8).

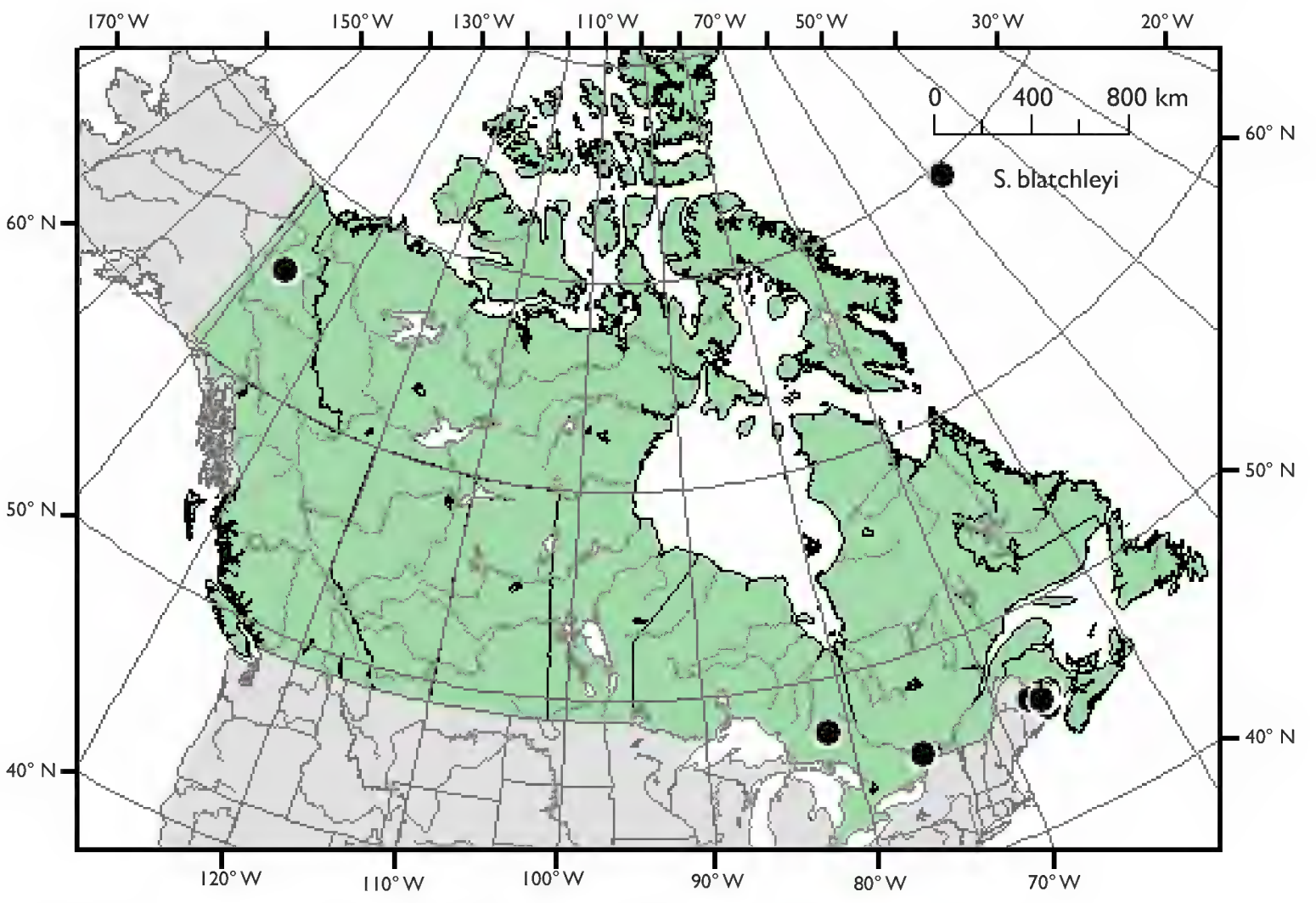
Description. Body length 2.7–2.8 mm, width 0.4 mm, approximately uniformly dark brown with slightly darker head and abdomen and paler legs and mouthparts (Fig. 8); integument with weak microsculpture, sculpticells irregularly hexagonal, pubescence short, except slightly longer on head and abdomen, yellowish-brown in artificial light, moderately dense. Head slightly elongate, round, carinate basally, tempora as long as approximately twice the maximal diameter of eye as seen from above (Fig. 8); antennae moderately robust with all articles slightly to strongly elongate (Fig. 8); pronotum transverse, broadly rounded laterally and posteriorly, broadest in apical half, pubescence directed anteriorly on apical third of the midline and laterally elsewhere (Fig. 8); elytra moderately elongate, longer than pronotum, transverse, hind margin nearly straight, pubescence directed obliquely posteriad (Fig. 8); abdomen parallel-sided, four basal tergites deeply impressed basally (Fig. 8). **Male.** Median lobe of the aedeagus broad and flattened (Fig. 69), venter of tubus sinuate and apex short and blunt (Fig. 70), apical sclerites of internal sac lunar-shaped in lateral view (Fig. 69), and



Figures 68–75. *Schistoglossa blatchleyi*: **68** paramere **69** median lobe of aedeagus in dorsal view **70** median lobe of aedeagus in lateral view **71** male tergite 8 **72** male sternite 8 **73** spermatheca **74** female tergite 8 **75** female sternite 8.

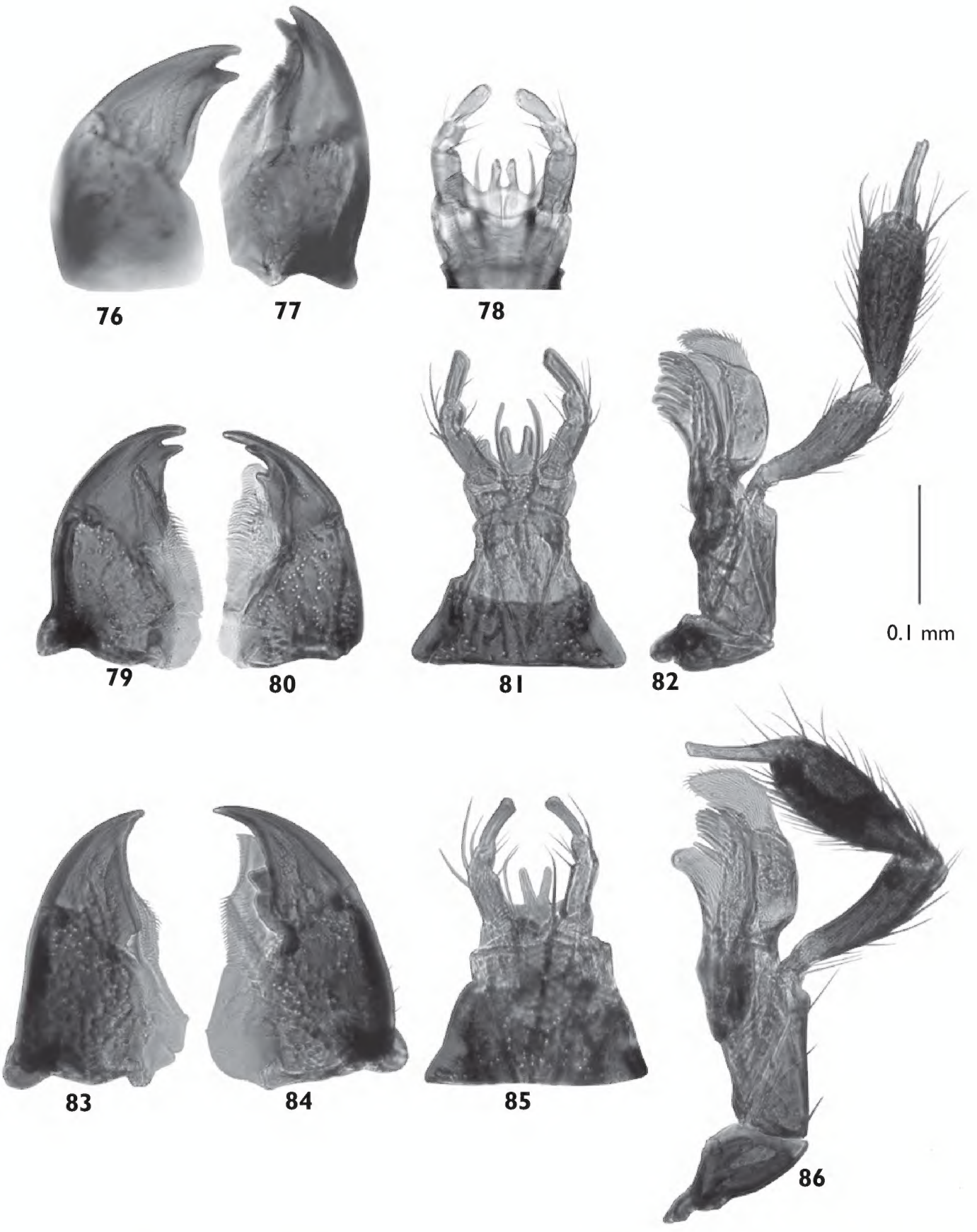
basal sclerites narrowly elongate (Fig. 69); paramere as illustrated (Fig. 68); tergite 8 transverse and entire, apical margin without or with small emargination (Fig. 71); sternite 8 elongate and rounded posteriorly, antecostal suture sinuate and pointed medially (Fig. 72). **Female.** Spermatheca club-shaped with capsule spherical and narrowed basally, bearing internal ribbings and with broad apical invagination, stem moderately narrow and straight (Fig. 73). Tergite and sternite 8 as illustrated (Figs 74, 75).

Bionomics. In New Brunswick, *S. blatchleyi* often occurs with *S. sphagnorum*, but in a wider variety of wetland habitats than *S. sphagnorum*. Adults were captured in or on the margin of circumneutral *Carex* marshes and fens by treading sedges and *Sphagnum* into water or sifting litter at the base of trees, in *Sphagnum* hummocks on margin of tamarack (*Larix laricina*) bogs, red maple swamps in moist leaves near vernal pools and leaves at base of trees, wet alder swamps in leaf litter and grass on hummocks, in moss and litter at the base of trees in calcareous eastern white cedar (*Thuja occidentalis*) fens with shrubby cinquefoil (*Pentaphylloides floribunda* A. Love). A few adults were collected in flood debris along a river margin. In New Brunswick, this species becomes active very early in the spring (late March and April) shortly after the snow has melted in open sun-exposed areas, usually at the base of trees and when snow is often still present in the adjacent forests. These sites may be overwintering sites. Adults were collected from March to July in New Brunswick. Elsewhere, adults were captured in riparian habitats in July and August.



Map 7. Collection localities in Canada of *S. blatchleyi*.

Geographic distribution (Map 7). Known from Newfoundland and Labrador, New Brunswick, Quebec, Ontario, Manitoba, Northwest Territories and Yukon Territory in Canada and Alaska and Indiana in the United States. It is recorded here for the first time for New Brunswick, Ontario and Quebec.



Figures 76–86. Mouthparts: **76–78** *Schistoglossa viduata*: **76, 77** mandibles **78** labium **79-82** *Schistoglossa sphagnorum*: **79, 80** mandibles **81** labium and mentum **82** maxilla **83–86** *Boreophilia islandica*: **83, 84** mandibles **85** labium and mentum **86** maxilla.

Comments. *Schistoglossa blatchleyi* is externally similar in appearance to the other members of the genus and in particular to *S. carexiana* and *S. sphagnorum*. Examining the genital structures is essential for definitive identification of the three species.

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